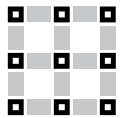




InfraBuild
Building futures through sustainable steel

DuraGal Flooring System[®]

Technical Information Guide



DuraGal
Flooring System



**Sloping Blocks | Bushfire Zones | Termite Areas | Flood Zones | Reactive Soils
Decks | Sub-Floors | Mezzanine Floors | Home Additions | Re-Piering Solution**

www.infrabuild.com



No Other System Makes as Much Sense

DuraGal Flooring System® is assembled on site and requires no welding. Simple screwed connections make construction fast and easy. DuraGal Flooring System® meets the industry durability guideline by including fully-galvanised Australian-manufactured tubular sections which are corrosion resistant and won't rot, warp or twist. The strength of steel allows for greater spans and reduces the impact of site works and sediment control issues.

DuraGal Flooring System®

- ✓ Fully Engineered System
- ✓ Easy to Install
- ✓ Adjustable Piers
- ✓ Termite, Fire & Corrosion Resistant
- ✓ Economical
- ✓ Versatile in Design
- ✓ Residential
- ✓ Decks and Verandahs
- ✓ Commercial



Now You Can Build a Better Floor With DuraGal Flooring System®

Difficult or sloping site construction can be easily handled by the DuraGal Flooring System®. Developed by InfraBuild, DuraGal Flooring System® is a steel flooring system utilising the higher strength and lighter weight advantages of DuraGal® Hollow sections. DuraGal Flooring System™ is suitable for a wide range of single storey residential homes, decks and commercial floors.

DuraGal Flooring System® has been developed by InfraBuild to provide a simple, strong and lightweight modular system to handle difficult or sloping site construction. The system utilises the higher strength and lighter weight advantages of DuraGal® ZB 135/135 hollow sections to produce a floor system that's suitable for a wide range of building applications.

Features

User friendly – Requires only normal trade and electrical tools, no welding is involved.

Fast and accurate levelling of the floor during or after construction is a great feature, and compensates for variations in the footings, now or later.

Surface Protection – DuraGal® products are Hot Dip Galvanized to Section 3, AS/NZS 4792 ZB 135/135 with a minimum average zinc coating of 135g/m² on both the internal and external surfaces.

Quality – InfraBuild's commitment to quality means you can depend on DuraGal® products to deliver reliable and consistent quality to site.

Versatility – The addition of the 2 kPa live load span tables to previously published 1.5 kPa, 3.0 kPa and 5 kPa, means the DuraGal Flooring System® is now more versatile than ever.

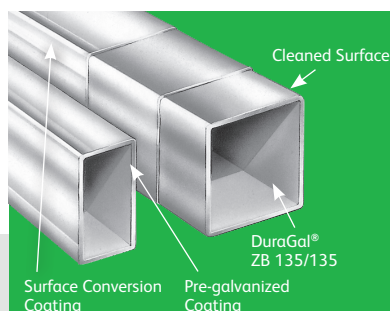
The many benefits offered by DuraGal Flooring System® has seen it adopted by many leading housing construction companies as their preferred system for sloping sites.

Suitable for single storey residential homes, decks and commercial floors, it offers the flexibility and ease of installation that can substantially reduce your on site construction costs.

Why You Should Use a DuraGal Flooring System®

- Simple and straightforward installation
- No welding required
- Unaffected by termites
- DuraGal® won't shrink, rot or warp like timber, helping to reduce expensive callbacks
- Larger spans, which can open up underfloor areas for use as a workshop or storage
- Improved underfloor access and ventilation (less piers)
- The costs of site preparation such as, cut and fill, retaining walls and drainage can be minimised
- Has the advantage of higher strength, lightweight, and corrosion resistant* DuraGal® hollow steel sections
- Manufactured to tight tolerances
- Longer lengths
- Comprehensive range of standard fittings to suit most applications
- Floor sheets can still be fixed by traditional methods
- Australian made and available nationally

* Refer to pages 27 to 32 of this publication for more details on corrosive environments and appropriate precautions during installation of exposed floor members.



DuraGal® ZB 135/135 Coating System

DuraGal Flooring System® is yet another example of the innovative building solutions developed by InfraBuild.

Isn't it time you started building a better floor with DuraGal Flooring System®?

SELECTION OF MATERIALS

In the construction of a floor system, building products manufactured by Austube Mills, and building products manufactured by other companies will be used. The product information in this publication relates solely to the products manufactured by Austube Mills.

It is strongly recommended that only DuraGal® ZB 135/135 hollow sections manufactured by Austube Mills be specified for use when using the design information in this publication. Testing using only Austube Mills products has validated the design criteria contained within this publication. It is recommended a note to this effect is included on any design documentation.



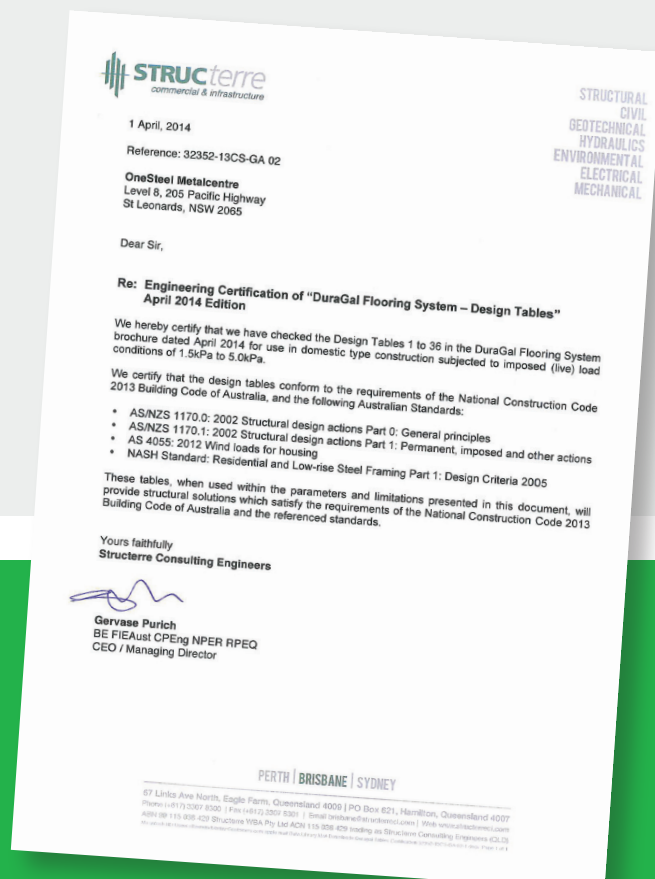
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Letter of Certification

* The DuraGal Flooring System® requires independent engineering certification to determine compliance of site specific conditions with statutory requirements.

InfraBuild Steel Centre and their approved re-sellers are the exclusive suppliers of the DuraGal Flooring System®



Joist Spans

for 1.5kPa domestic floors in cyclonic and non-cyclonic regions

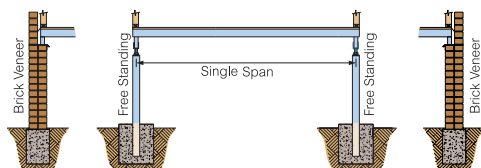
Single Span

Table 1 – Joists for 1.5 kPa floors

DuraGal® ZB 135/135 C450I0 RHS Size ²	Joist Spacing (mm)	
	450 ¹	600
	Maximum Joist Span (m)	
75 x 50	x 1.6	2.14
	x 2.0	2.30
100 x 50	x 1.6	2.78
	x 2.0	3.00
150 x 50	x 2.0	4.44
	x 2.5	4.81
	x 3.0	5.13
	x 4.0	5.52
	x 5.0	5.65
	x 6.0	5.73

1. InfraBuild recommend 450mm joist spacing.

2. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.



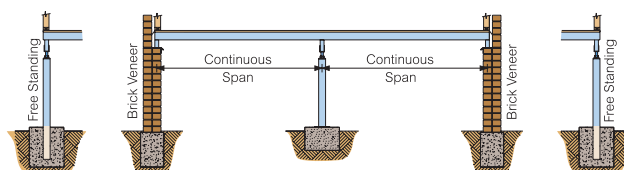
Continuous Span (See note 2 - design criteria page 4)

Table 2 – Joists for 1.5 kPa floors

DuraGal® ZB 135/135 C450I0 RHS Size ²	Joist Spacing (mm)	
	450 ¹	600
	Maximum Joist Span (m)	
75 x 50	x 1.6	2.52
	x 2.0	2.42
100 x 50	x 1.6	3.31
	x 2.0	3.59
150 x 50	x 2.0	5.46
	x 2.5	5.74
	x 3.0	5.98
	x 4.0	6.31
	x 5.0	6.45
	x 6.0	6.55

1. InfraBuild recommend 450mm joist spacing.

2. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.



Design Criteria

- Span tables 1 to 4 & 17 to 20 have been calculated as appropriate in accordance with NASH Standard Residential and Low-rise Steel Framing, Part 1 Design Criteria 2005, AS 4100: Steel Structure, AS/NZS 1170.0: 2002 Structural design actions Part 0: General principles, AS/NZS 1170.1: 2002 Structural design actions Part 1: Permanent, imposed and other actions with Live Load Q equal to 1.5 kPa, and Dead Load, G equal to 0.4 kPa, AS 4055: 2012 Wind loads for housing.
- For continuous span where the variation between adjacent spans exceeds 30% of the larger span, the single span tables must be used.
- Tables are available on request for:
 - Live loads other than 1.5, 2, 3 & 5 kPa
 - DuraGal® ZB 135/135 sizes not given in Table 1 to 6
- If additional loads are applied the advice of a Structural Engineer must be sought.

Floor Stiffness

The serviceability limits are determined from the maximum spans given Table 1 to 4 are a combination of:

- The serviceability requirements specified in NASH Standard Residential and Low-rise Steel Framing, Part 1 Design Criteria 2005, and;
- The serviceability limits determine from in-house testing and field performance.

The spans given for the joists in Tables 1 and 2 are the maximum recommended spans and as such not all users will be satisfied with the stiffness of the floor. For those desiring a stiffer floor either the spans tabulated can be reduced, the joist spacing reduced, or both.

Joist spacing of 450mm spans calculated using 19mm particle board or 15mm F14 plywood floor sheeting. Joist spacing of 600mm spans calculated using 22mm floor sheeting.

If you need guidance for large open areas, areas not supporting roof and wall loads, or to achieve the floor stiffness you require, consult your DuraGal Flooring System® Supplier who can provide advice on the floor design to meet your needs.

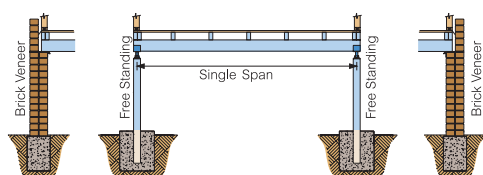
Bearer Spans

for 1.5kPa domestic floors in cyclonic and non-cyclonic regions

Single Span

Table 3 – Bearers for 1.5 kPa floors											
DuraGal® ZB 135/135 C450L0 RHS Size¹	Joist Span (mm)										
	1.80	2.10	2.40	2.70	3.00	3.60	4.20	4.80	5.40	6.00	
	Maximum Bearer Span (m)										
100 x 50 x 2.0	1.98	1.88	1.80	1.73	1.67	1.57	1.49				
125 x 75 x 2.0	2.60	2.47	2.36	2.27	2.19	2.06	1.95	1.87			
x 2.5	2.78	2.64	2.52	2.43	2.34	2.20	2.09	2.00	1.93		
x 3.0	2.93	2.78	2.65	2.55	2.46	2.32	2.20	2.11	2.03	1.96	
150 x 50 x 2.0	2.78	2.64	2.53	2.43	2.35	2.21	2.10	2.01	1.93	1.86	
x 2.5	2.97	2.82	2.70	2.60	2.51	2.36	2.24	2.14	2.06	1.99	
x 3.0	3.14	2.98	2.85	2.74	2.65	2.49	2.37	2.26	2.18	2.10	
x 4.0	3.38	3.21	3.07	2.95	2.85	2.68	2.55	2.44	2.34	2.26	
x 5.0	2.58	3.40	3.25	3.13	3.02	2.84	2.70	2.58	2.48	2.40	
x 6.0	3.74	3.55	3.40	3.27	3.15	2.97	2.82	2.70	2.59	2.50	

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.
2. Refer notes on load bearing walls below.



Preferred Bearer and Joist Sizes

In typical applications, the most economical DuraGal Flooring System® will result from the use of 150x50x2.0 bearers and joists of either 100x50x1.6 or 75x50x1.6. To ensure optimal floor performance, joists spaced at 450mm centres are recommended.

When selecting bearer and joist sizes refer to page 24 of this guide for availability of standard joiners.

Perimeter Bearers On Adjustable Piers

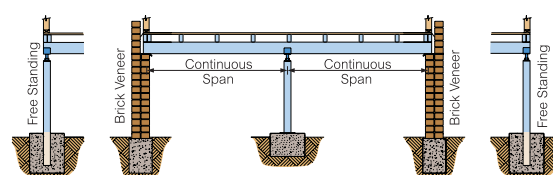
The sizes and bearer spans given in Tables 3 and 4 are suitable for use under load bearing walls for single storey construction providing the following criteria is satisfied:

- The pier adjustable top connection and U-Bracket is used to support the bearer, and;
- The bearer span is determined with a minimum joist span of 3.6m even if the actual joist span is less, and;
- The maximum roof load width is 4m for tile roof, and 6m for steel sheet roof, and;
- The bearer is on the perimeter, parallel and directly beneath the load-bearing wall and is not subjected to concentrated loads from jambing studs.

Continuous Span (See note 2 - design criteria page 4)

Table 4 – Bearers for 1.5 kPa floors											
DuraGal® ZB 135/135 C450L0 RHS Size¹	Joist Span (mm)										
	1.80	2.10	2.40	2.70	3.00	3.60	4.20	4.80	5.40	6.00	
	Maximum Bearer Span (m)										
100 x 50 x 2.0	2.65	2.52	2.41	2.32	2.24	2.10	1.99				
125 x 75 x 2.0	3.48	3.30	3.11	2.94	2.79	2.54	2.35	2.20			
x 2.5	3.72	3.54	3.38	3.25	3.14	2.95	2.80	2.61	2.47		
x 3.0	3.93	3.72	3.55	3.42	3.30	3.11	2.95	2.83	2.72	2.63	
150 x 50 x 2.0	3.73	3.54	3.39	3.26	3.14	2.88	2.66	2.49	2.35	2.23	
x 2.5	3.99	3.79	3.62	3.48	3.36	3.16	3.00	2.87	2.75	2.61	
x 3.0	4.21	4.00	3.82	3.68	3.55	3.34	3.17	3.03	2.92	2.82	
x 4.0	4.53	4.31	4.12	3.96	3.82	3.60	3.42	3.27	3.14	3.03	
x 5.0	4.80	4.56	4.36	4.19	4.05	3.81	3.62	3.46	3.33	3.21	
x 6.0	5.01	4.76	4.56	4.38	4.23	3.98	3.78	3.62	3.48	3.36	

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.
2. Refer notes on load bearing walls below.



Perimeter Bearers On Brick Piers

The range of sizes suitable for bearers under load bearing walls when supported over brick piers for a 1.5 kPa floor live load are restricted to 125x75 and 150x50 of 2.0mm or thicker as given in tables 3 and 4, and for a joist span of 3.6m or less.

For joist spans greater than 3.6m up to 6m suitable bearer sizes are 125x75, 150x50 of 2.5mm or thicker. In addition, the following criteria must also be satisfied:

- The maximum brick pier spacing is 2m for continuous spans and a maximum of 1.8m for single spans, and;
- At least 200mm of support for the full width of the bearer at each brick pier, and;
- The maximum roof load width is 5m for tile roof and 8m for steel sheet roof (refer page 17), and;
- The bearer is on the perimeter, parallel and directly beneath the load-bearing wall and is not subjected to concentrated loads from jambing studs.

Joist Spans

for 2kPa, 3kPa and 5kPa commercial floors in cyclonic and non-cyclonic regions

Single Span

Table 5 – Joists for 2 kPa floors

DuraGal® ZB 135/135 C450I0 RHS Size²		Joist Spacing (mm)	
		450¹	600
		Maximum Joist Span (m)	
75 x 50	x 1.6	2.14	2.05
	x 2.0	2.30	2.20
100 x 50	x 1.6	2.78	2.65
	x 2.0	3.00	2.85
150 x 50	x 2.0	4.44	4.16
	x 2.5	4.81	4.49
	x 3.0	5.13	4.77
	x 4.0	5.39	5.04
	x 5.0	5.59	5.24
	x 6.0	5.73	5.39

1. InfraBuild recommend 450mm joist spacing.

2. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

Continuous Span (See note 2 - design criteria page 4)

Table 6 – Joists for 2 kPa floors

DuraGal® ZB 135/135 C450I0 RHS Size²		Joist Spacing (mm)	
		450¹	600
		Maximum Joist Span (m)	
75 x 50	x 1.6	2.52	2.39
	x 2.0	2.72	2.57
100 x 50	x 1.6	3.31	3.10
	x 2.0	3.58	3.34
150 x 50	x 2.0	5.08	4.73
	x 2.5	5.34	4.97
	x 3.0	5.56	5.18
	x 4.0	5.88	5.47
	x 5.0	6.14	5.72
	x 6.0	6.35	5.91

1. InfraBuild recommend 450mm joist spacing.

2. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

Single Span

Table 7 – Joists for 3 kPa floors

DuraGal® ZB 135/135 C450I0 RHS Size²		Joist Spacing (mm)	
		450¹	600
		Maximum Joist Span (m)	
75 x 50	x 1.6	2.14	2.05
	x 2.0	2.30	2.20
100 x 50	x 1.6	2.78	2.65
	x 2.0	3.00	2.85
150 x 50	x 2.0	4.29	3.99
	x 2.5	4.51	4.20
	x 3.0	4.69	4.37
	x 4.0	4.96	4.62
	x 5.0	5.18	4.82
	x 6.0	5.36	4.98

1. InfraBuild recommend 450mm joist spacing.

2. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

Continuous Span (See note 2 - design criteria page 4)

Table 8 – Joists for 3 kPa floors

DuraGal® ZB 135/135 C450I0 RHS Size²		Joist Spacing (mm)	
		450¹	600
		Maximum Joist Span (m)	
75 x 50	x 1.6	2.52	2.39
	x 2.0	2.72	2.55
100 x 50	x 1.6	3.24	2.71
	x 2.0	3.54	3.22
150 x 50	x 2.0	4.59	3.83
	x 2.5	4.83	4.49
	x 3.0	5.03	4.68
	x 4.0	5.32	4.95
	x 5.0	5.55	5.17
	x 6.0	5.73	5.34

1. InfraBuild recommend 450mm joist spacing.

2. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

Joist Spans

for 2kPa, 3kPa and 5kPa commercial floors in cyclonic and non-cyclonic regions



Single Span

Table 9 – Joists for 5 kPa floors

DuraGal® ZB 135/135 C450I0 RHS Size ²	Joist Spacing (mm)		
	450 ¹		600
	Maximum Joist Span (m)		
75 x 50	x 1.6	2.02	1.84
	x 2.0	2.16	1.96
100 x 50	x 1.6	2.55	2.32
	x 2.0	2.73	2.48
150 x 50	x 2.0	3.77	3.48
	x 2.5	3.97	3.69
	x 3.0	4.13	3.84
	x 4.0	4.37	4.07
	x 5.0	4.56	4.25
	x 6.0	4.71	4.39

1. InfraBuild recommend 450mm joist spacing.

2. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

Continuous Span (See note 2 - design criteria page 4)

Table 10 – Joists for 5 kPa floors

DuraGal® ZB 135/135 C450I0 RHS Size ²	Joist Spacing (mm)		
	450 ¹		600
	Maximum Joist Span (m)		
75 x 50	x 1.6	2.21	1.87
	x 2.0	2.37	2.15
100 x 50	x 1.6	2.37	1.96
	x 2.0	2.99	2.70
150 x 50	x 2.0	3.31	2.69
	x 2.5	4.25	3.83
	x 3.0	4.42	4.12
	x 4.0	4.68	4.35
	x 5.0	4.88	4.55
	x 6.0	5.05	4.70

1. InfraBuild recommend 450mm joist spacing.

2. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

Design Criteria

- Span tables 5 to 16 & 21 to 32 have been calculated as appropriate in accordance with NASH Standard Residential and Low-rise Steel Framing, Part 1 Design Criteria 2005, AS 4100: Steel Structure, AS/NZS 1170.0: 2002 Structural design actions Part 0: General principles, AS/NZS 1170.1: 2002 Structural design actions Part 1: Permanent, imposed and other actions, AS 4055: 2012 Wind loads for housing With:
 - 2 kPa Tables Live Load, Q = 2.0 kPa, Dead Load, G = 0.486 kPa
 - 3 kPa Tables Live Load, Q = 3.0 kPa, Dead Load, G = 0.657 kPa
 - 5 kPa Tables Live Load, Q = 5.0 kPa, Dead Load, G = 1.00 kPa.
- For continuous span where the variation between adjacent spans exceeds 30% of the larger span, the single span tables must be used.
- Tables are available on request for:
 - Live loads other than 1.5, 2, 3 & 5 kPa
 - DuraGal® ZB 135/135 sizes not listed in Tables 5 to 16 and 21 to 32.
- If additional loads are applied the advice of a Structural Engineer must be sought.

Floor Stiffness

The serviceability limits are determined from the maximum spans given Table 5 to 10 are a combination of:

- the serviceability requirements specified in NASH Standard Residential and Low-rise Steel Framing, Part 1 Design Criteria 2005, and
- the serviceability limits determine in-house testing and field performance.

The spans given for the joists in Tables 5 to 10 are the maximum recommended spans and as such not all users will be satisfied with the stiffness of the floor. For those desiring a stiffer floor either the spans tabulated can be reduced, the joist spacing reduced, or both.

Joist spacing of 450mm spans calculated using 19mm particle board or 15mm F14 plywood floor sheeting. Joist spacing of 600mm spans calculated using 22mm floor sheeting.

If you need guidance for large open areas, areas not supporting roof and wall loads, or to achieve the floor stiffness you require, consult your DuraGal Flooring System® Supplier who can provide advice on the floor design to meet your needs.

Bearer Spans

for 2kPa, 3kPa and 5kPa commercial floors in cyclonic and non-cyclonic regions

Single Span

Table 11 – Bearers for 2 kPa floors

DuraGal® ZB 135/135 C450LO RHS Size¹	Joist Span (mm)									
	1.80	2.10	2.40	2.70	3.00	3.60	4.20	4.80	5.40	6.00
	Maximum Bearer Span (m)									
100 x 50 x 2.0	1.80	1.71	1.63	1.57	1.52	1.43	1.36	1.30	1.25	1.20
125 x 75 x 2.0	2.36	2.24	2.14	2.06	1.99	1.87	1.78	1.70	1.62	1.53
x 2.5	2.52	2.39	2.29	2.20	2.13	2.00	1.90	1.82	1.75	1.69
x 3.0	2.66	2.53	2.42	2.32	2.24	2.11	2.01	1.92	1.84	1.78
150 x 50 x 2.0	2.53	2.40	2.29	2.21	2.13	2.00	1.90	1.82	1.75	1.69
x 2.5	2.70	2.57	2.45	2.36	2.28	2.14	2.04	1.95	1.87	1.81
x 3.0	2.85	2.71	2.59	2.49	2.40	2.26	2.15	2.06	1.98	1.91
x 4.0	3.07	2.92	2.79	2.68	2.59	2.44	2.32	2.22	2.13	2.06
x 5.0	3.25	3.09	2.96	2.84	2.74	2.58	2.45	2.35	2.26	2.18
x 6.0	3.40	3.23	3.09	2.97	2.87	2.70	2.56	2.45	2.36	2.28

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

2. Refer notes on load bearing walls below.

Continuous Span (See note 2 - design criteria page 4)

Table 12 – Bearers for 2 kPa floors

DuraGal® ZB 135/135 C450LO RHS Size¹	Joist Span (mm)									
	1.80	2.10	2.40	2.70	3.00	3.60	4.20	4.80	5.40	6.00
	Maximum Bearer Span (m)									
100 x 50 x 2.0	2.41	2.29	2.19	2.11	1.99	1.81	1.65	1.54	1.39	1.31
125 x 75 x 2.0	3.01	2.79	2.61	2.46	2.33	2.11	1.93	1.80	1.62	1.53
x 2.5	3.38	3.21	3.07	2.91	2.75	2.50	2.38	2.13	2.06	1.80
x 3.0	3.57	3.39	3.24	3.12	3.01	2.83	2.63	2.47	2.22	2.09
150 x 50 x 2.0	3.39	3.15	2.95	2.78	2.63	2.39	2.17	2.03	1.83	1.72
x 2.5	3.62	3.44	3.29	3.16	3.06	2.80	2.63	2.39	1.14	2.02
x 3.0	3.82	3.63	3.47	3.34	3.22	3.03	2.77	2.59	2.33	2.19
x 4.0	4.12	3.91	3.74	3.60	3.47	3.27	3.11	2.92	2.63	2.47
x 5.0	4.36	4.14	3.96	3.81	3.68	3.46	3.29	3.15	2.88	2.71
x 6.0	4.56	4.33	4.14	3.98	3.84	3.62	3.44	3.29	3.16	2.92

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

2. Refer notes on load bearing walls below.

Single Span

Table 13 – Bearers for 3 kPa floors

DuraGal® ZB 135/135 C450LO RHS Size¹	Joist Span (mm)									
	1.80	2.10	2.40	2.70	3.00	3.60	4.20	4.80	5.40	6.00
	Maximum Bearer Span (m)									
100 x 50 x 2.0	1.57	1.49	1.43	1.37	1.33	1.25	1.18	1.13	1.09	1.05
125 x 75 x 2.0	2.06	1.95	1.87	1.80	1.74	1.63	1.55	1.48	1.43	1.38
x 2.5	2.20	2.09	2.00	1.92	1.86	1.75	1.66	1.59	1.53	1.47
x 3.0	2.32	2.21	2.11	2.03	1.96	1.84	1.75	1.68	1.61	1.56
150 x 50 x 2.0	2.21	2.10	2.00	1.93	1.86	1.75	1.66	1.59	1.53	1.48
x 2.5	2.36	2.24	2.14	2.06	1.99	1.87	1.78	1.70	1.64	1.58
x 3.0	2.49	2.37	2.26	2.18	2.10	1.98	1.88	1.80	1.73	1.67
x 4.0	2.68	2.55	2.44	2.34	2.26	2.13	2.02	1.94	1.86	1.80
x 5.0	2.84	2.70	2.58	2.48	2.40	2.26	2.14	2.05	1.97	1.90
x 6.0	2.97	2.82	2.70	2.59	2.50	2.36	2.24	2.14	2.06	1.99

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

2. Refer notes on load bearing walls below.

Continuous Span (See note 2 - design criteria page 4)

Table 14 – Bearers for 3 kPa floors

DuraGal® ZB 135/135 C450LO RHS Size¹	Joist Span (mm)									
	1.80	2.10	2.40	2.70	3.00	3.60	4.20	4.80	5.40	6.00
	Maximum Bearer Span (m)									
100 x 50 x 2.0	2.11	2.00	1.91	1.81	1.72	1.57	1.45	1.36	1.28	1.22
125 x 75 x 2.0	2.59	2.40	2.24	2.12	2.01	1.83	1.70	1.59	1.50	1.42
x 2.5	2.95	2.81	2.65	2.50	2.37	2.17	2.01	1.88	1.77	1.68
x 3.0	3.12	2.96	2.83	2.72	2.63	2.47	2.32	2.17	2.05	1.94
150 x 50 x 2.0	2.93	2.71	2.53	2.39	2.27	2.07	1.92	1.79	1.69	1.60
x 2.5	3.16	3.01	2.87	2.76	2.66	2.43	2.25	2.10	1.98	1.88
x 3.0	3.34	3.17	3.03	2.92	2.82	2.64	2.44	2.28	2.15	2.04
x 4.0	3.60	3.42	3.27	3.14	3.03	2.86	2.71	2.58	2.43	2.30
x 5.0	3.81	3.62	3.46	3.33	3.21	3.03	2.87	2.75	2.64	2.53
x 6.0	3.98	3.78	3.62	3.48	3.36	3.16	3.00	2.87	2.76	2.67

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

2. Refer notes on load bearing walls below.

Bearer Spans

for 2kPa, 3kPa and 5kPa commercial floors in cyclonic and non-cyclonic regions

Single Span

Table 15 – Bearers for 5 kPa floors											
DuraGal® ZB 135/135 C450L0 RHS Size¹	Joist Span (mm)										
	1.80	2.10	2.40	2.70	3.00	3.60	4.20	4.80	5.40	6.00	
	Maximum Bearer Span (m)										
100 x 50 x 2.0	1.60	1.52	1.45	1.39	1.34	1.22	1.13	1.06	1.00		
125 x 75 x 2.0	2.02	1.87	1.75	1.65	1.57	1.43	1.32	1.24	1.17	1.11	
x 2.5	2.24	2.12	2.03	1.95	1.85	1.69	1.57	1.46	1.38	1.25	
x 3.0	2.36	2.24	2.14	2.06	1.99	1.87	1.78	1.69	1.60	1.52	
150 x 50 x 2.0	2.24	2.11	1.98	1.86	1.77	1.61	1.49	1.33	1.18	1.06	
x 2.5	2.40	2.28	2.18	2.09	2.02	1.89	1.75	1.64	1.55	1.47	
x 3.0	2.53	2.40	2.30	2.21	2.13	2.01	1.90	1.78	1.68	1.59	
x 4.0	2.73	2.59	2.48	2.38	2.30	2.16	2.05	1.97	1.89	1.80	
x 5.0	2.89	2.74	2.62	2.52	2.43	2.29	2.18	2.08	2.00	1.93	
x 6.0	3.02	2.86	2.74	2.63	2.54	2.39	2.27	2.17	2.09	2.02	

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System™ Supplier in your area.

2. Refer notes on load bearing walls below.

Continuous Span (See note 2 - design criteria page 4)

Table 16 – Bearers for 5 kPa floors												
DuraGal® ZB 135/135 C450L0 RHS Size¹	Joist Span (mm)											
	1.80	2.10	2.40	2.70	3.00	3.60	4.20	4.80	5.40	6.00		
	Maximum Bearer Span (m)											
100 x 50 x 2.0	1.73	1.60	1.50	1.41	1.34	1.22	1.13	1.06	1.00			
125 x 75 x 2.0	2.02	1.87	1.75	1.65	1.57	1.43	1.32	1.24	1.17	1.11		
x 2.5	2.39	2.21	2.07	1.95	1.85	1.69	1.57	1.46	1.38	1.31		
x 3.0	2.59	2.46	2.35	2.26	2.14	1.96	1.81	1.69	1.60	1.52		
150 x 50 x 2.0	2.28	2.11	1.98	1.86	1.77	1.61	1.49	1.40	1.32	1.19		
x 2.5	1.62	2.48	2.32	2.19	2.07	1.89	1.75	1.64	1.55	1.47		
x 3.0	2.77	2.63	2.52	2.38	2.25	2.06	1.90	1.78	1.68	1.59		
x 4.0	2.99	2.84	2.71	2.61	2.52	2.32	2.15	2.01	1.89	1.80		
x 5.0	3.16	3.00	2.87	2.76	2.67	2.51	2.36	2.21	2.08	1.97		
x 6.0	3.30	3.14	3.00	2.89	2.79	2.62	2.49	2.37	2.24	2.12		

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System™ Supplier in your area.

2. Refer notes on load bearing walls below.

Preferred Bearer and Joist Sizes

When selecting bearer and joist sizes refer to page 25 of this guide for availability of standard joiners.

Perimeter Bearers on Adjustable Piers and Brick Piers

The sizes and bearer spans given in Tables 11 to 16 are to be assessed by a registered structural engineer to determine their suitability for use under load bearing walls.

- The pier adjustable top connection and U-Bracket is used to support the bearer, and;
- The bearer span is determined with a minimum joist span of 3.6m even if the actual joist span is less, and;
- The maximum roof load width is 4m for tile roof, and 6m for steel sheet roof, and;
- The bearer is on the perimeter, parallel and directly beneath the load-bearing wall and is not subjected to concentrated loads from jambing studs.

The range of sizes suitable for bearers under load bearing walls when supported over brick piers for a 1.5 kPa floor live load are restricted to 125x75 & 150x50 of 2.5mm or thicker as given in tables 9 to 12, and for a joist span of 3.6m or less. For joist spans greater than 3.6m up to 6m suitable bearer sizes are 150x50 of 4.0mm or thicker. In addition, the following criteria must also be satisfied:

- The maximum brick pier spacing is 2m for continuous spans and a maximum of 1.8m for single spans, and;
- At least 200mm of support for the full width of the bearer at each brick pier, and;
- The maximum roof load width is 5m for tile roof and 8m for steel sheet roof (refer page 16), and;
- The bearer is on the perimeter, parallel and directly beneath the load-bearing wall and is not subjected to concentrated loads from jambing studs.

Cantilever Spans

for 1.5kPa domestic floors in cyclonic and non-cyclonic regions

Joists

Non Cyclonic

Table 17 – Maximum span of cantilever joists 1.5 kPa

DuraGal® ZB 135/135 C450L0 RHS Size¹		Maximum Cantilever Span (m)					
		Joist Spacing = 450mm			Joist Spacing = 600mm		
		No Roof Loading	Sheet Roof*	Tile Roof*	No Roof Loading	Sheet Roof*	Tile Roof*
75 x 50	x 1.6	0.53	0.18	0.10	0.47	0.15	0.08
	x 2.0	0.58	0.20	0.12	0.51	0.17	0.09
100 x 50	x 1.6	0.74	0.27	0.16	0.65	0.22	0.13
	x 2.0	0.81	0.30	0.18	0.72	0.25	0.14
150 x 50	x 2.0	1.29	0.52	0.31	1.14	0.44	0.26
	x 2.5	1.39	0.59	0.36	1.25	0.49	0.29
	x 3.0	1.45	0.65	0.40	1.33	0.55	0.33
	x 4.0	1.55	0.75	0.47	1.43	0.63	0.38
	x 5.0	1.62	0.85	0.54	1.50	0.70	0.43
	x 6.0	1.67	0.93	0.59	1.55	0.76	0.48

* MAXIMUM ROOF LOAD WIDTH = 5m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System™ Supplier in your area.
2. Refer to the Design Criteria on page 10.

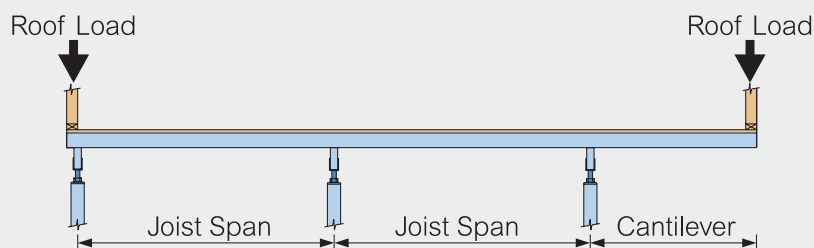
Cyclonic

Table 18 – Maximum span of cantilever joists 1.5 kPa

DuraGal® ZB 135/135 C450L0 RHS Size¹		Maximum Cantilever Span (m)					
		Joist Spacing = 450mm			Joist Spacing = 600mm		
		No Roof Loading	Sheet Roof*	Tile Roof*	No Roof Loading	Sheet Roof*	Tile Roof*
75 x 50	x 1.6	0.53	0.07	0.09	0.47	0.05	0.07
	x 2.0	0.58	0.07	0.10	0.51	0.06	0.08
100 x 50	x 1.6	0.74	0.10	0.14	0.65	0.08	0.11
	x 2.0	0.81	0.11	0.16	0.72	0.09	0.13
150 x 50	x 2.0	1.29	0.20	0.28	1.14	0.17	0.23
	x 2.5	1.39	0.24	0.32	1.25	0.19	0.26
	x 3.0	1.45	0.26	0.36	1.33	0.22	0.29
	x 4.0	1.55	0.31	0.42	1.43	0.25	0.34
	x 5.0	1.62	0.36	0.48	1.50	0.29	0.39
	x 6.0	1.67	0.40	0.53	1.55	0.32	0.43

* MAXIMUM ROOF LOAD WIDTH = 5m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System™ Supplier in your area.
2. Refer to the Design Criteria on page 10.



Cantilever Spans

for 1.5kPa domestic floors in cyclonic and non-cyclonic regions

Bearers

Non Cyclonic

Table 19 – Maximum span of cantilever joists 1.5 kPa

DuraGal® ZB 135/135 C450L0 RHS Size ¹	Maximum Cantilever Span (m)		
	No Roof Loading	Sheet Roof*	Tile Roof*
100 x 50 x 2.0	0.44	0.21	0.12
125 x 75 x 2.0	0.50	0.32	0.20
x 2.5	0.70	0.36	0.23
x 3.0	0.75	0.40	0.25
150 x 50 x 2.0	0.48	0.36	0.23
x 2.5	0.77	0.40	0.26
x 3.0	0.82	0.44	0.29
x 4.0	0.91	0.50	0.33
x 5.0	0.96	0.54	0.36
x 6.0	1.01	0.58	0.39

* MAXIMUM ROOF LOAD WIDTH = 1.8m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System™ Supplier in your area.

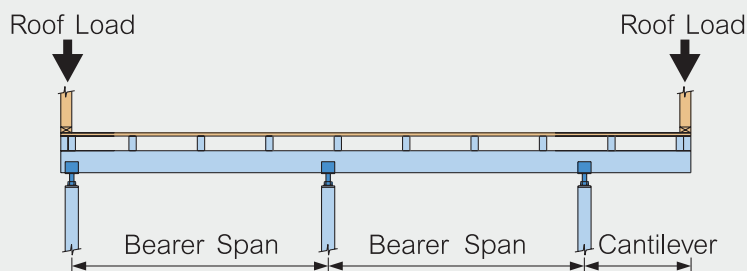
Cyclonic

Table 19 – Maximum span of cantilever joists 1.5 kPa

DuraGal® ZB 135/135 C450L0 RHS Size ¹	Maximum Cantilever Span (m)		
	No Roof Loading	Sheet Roof*	Tile Roof*
100 x 50 x 2.0	0.44	0.08	0.11
125 x 75 x 2.0	0.50	0.14	0.18
x 2.5	0.70	0.15	0.21
x 3.0	0.75	0.17	0.23
150 x 50 x 2.0	0.48	0.15	0.21
x 2.5	0.77	0.18	0.24
x 3.0	0.82	0.19	0.26
x 4.0	0.91	0.22	0.30
x 5.0	0.96	0.25	0.33
x 6.0	1.01	0.27	0.36

* MAXIMUM ROOF LOAD WIDTH = 1.8m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System™ Supplier in your area.



Design Criteria

- Roof Dead Load, G used is 0.4 kPa for Steel Roof and 0.9 kPa for Tile Roof, and Roof Live Load used is 0.25 kPa.
- Live Loads, Q used on cantilever are:
 - * 1.5 kPa for cantilevers supporting Sheet and Tile Roof
 - * 3.0 kPa & 1.5kN/m run on edge for "No Roof Load"
 Live Loads used on backspan:
 - * 0 kPa for floors supporting Sheet and Tile Roof
 - * 0.3 kPa for "No Roof Load"
- Wind Loads used in Tables 18 and 20 are determined in accordance with AS 4055: Wind loads for housing, for maximum "C3" wind category.

- Maximum roof load width is equal to 5m for joists and 1.8m for bearers.
- For cantilever balcony not supporting a roof use "No Roof Loading" column.
- Maximum bearer spacing for Table 19 and 20 is 3.6m.
- If additional loads are applied the advice of a Structural Engineer must be sought.

Cantilever Spans

for 1.5kPa domestic floors in cyclonic and non-cyclonic regions

Joists

Non Cyclonic

Table 21 – Maximum span of cantilever joists 2 kPa

DuraGal® ZB 135/135 C450L0 RHS Size¹		Maximum Cantilever Span (m)					
		Joist Spacing = 450mm			Joist Spacing = 600mm		
		No Roof Loading	Sheet Roof*	Tile Roof*	No Roof Loading	Sheet Roof*	Tile Roof*
75 x 50	x 1.6	0.53	0.18	0.10	0.47	0.15	0.08
	x 2.0	0.58	0.20	0.12	0.52	0.16	0.09
100 x 50	x 1.6	0.73	0.27	0.16	0.65	0.22	0.13
	x 2.0	0.80	0.30	0.17	0.72	0.24	0.14
150 x 50	x 2.0	1.22	0.53	0.33	1.10	0.45	0.27
	x 2.5	1.31	0.60	0.38	1.18	0.51	0.31
	x 3.0	1.38	0.67	0.42	1.25	0.56	0.35
	x 4.0	1.48	0.76	0.49	1.36	0.64	0.40
	x 5.0	1.55	0.84	0.55	1.43	0.71	0.45
	x 6.0	1.61	0.91	0.60	1.48	0.77	0.49

* MAXIMUM ROOF LOAD WIDTH = 5m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System™ Supplier in your area.
2. Refer to the Design Criteria on page 12.

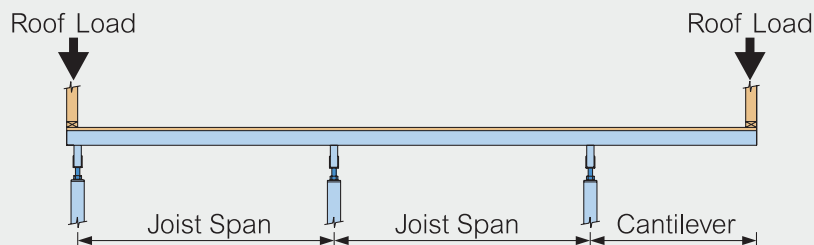
Cyclonic

Table 22 – Maximum span of cantilever joists 2 kPa

DuraGal® ZB 135/135 C450L0 RHS Size¹		Maximum Cantilever Span (m)					
		Joist Spacing = 450mm			Joist Spacing = 600mm		
		No Roof Loading	Sheet Roof*	Tile Roof*	No Roof Loading	Sheet Roof*	Tile Roof*
75 x 50	x 1.6	0.54	0.07	0.10	0.48	0.06	0.08
	x 2.0	0.59	0.08	0.11	0.53	0.07	0.09
100 x 50	x 1.6	0.75	0.11	0.15	0.67	0.09	0.12
	x 2.0	0.82	0.12	0.17	0.73	0.10	0.14
150 x 50	x 2.0	1.25	0.24	0.32	1.12	0.19	0.26
	x 2.5	1.32	0.27	0.37	1.21	0.22	0.30
	x 3.0	1.38	0.31	0.41	1.27	0.25	0.34
	x 4.0	1.48	0.36	0.48	1.36	0.29	0.39
	x 5.0	1.55	0.40	0.54	1.43	0.33	0.44
	x 6.0	1.61	0.44	0.59	1.48	0.36	0.48

* MAXIMUM ROOF LOAD WIDTH = 5m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System™ Supplier in your area.
2. Refer to the Design Criteria on page 12.



Cantilever Spans

for 2kPa domestic floors in cyclonic and non-cyclonic regions

Bearers

Non Cyclonic

Table 23 – Maximum span of cantilever bearers 2 kPa

DuraGal® ZB 135/135 C450L0 RHS Size ¹	Maximum Cantilever Span (m)		
	No Roof Loading	Sheet Roof*	Tile Roof*
100 x 50 x 2.0	0.42	0.21	0.13
125 x 75 x 2.0	0.44	0.33	0.22
x 2.5	0.66	0.37	0.24
x 3.0	0.71	0.40	0.27
150 x 50 x 2.0	0.41	0.37	0.25
x 2.5	0.70	0.41	0.28
x 3.0	0.78	0.45	0.30
x 4.0	0.85	0.50	0.34
x 5.0	0.91	0.55	0.38
x 6.0	0.96	0.58	0.41

* MAXIMUM ROOF LOAD WIDTH = 1.8m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

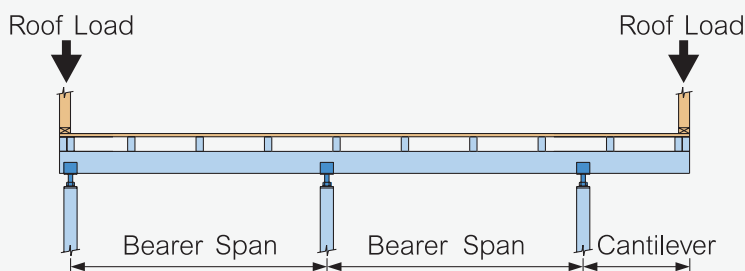
Cyclonic

Table 24 – Maximum span of cantilever bearers 2 kPa

DuraGal® ZB 135/135 C450L0 RHS Size ¹	Maximum Cantilever Span (m)		
	No Roof Loading	Sheet Roof*	Tile Roof*
100 x 50 x 2.0	0.42	0.09	0.12
125 x 75 x 2.0	0.44	0.15	0.20
x 2.5	0.66	0.17	0.22
x 3.0	0.71	0.18	0.24
150 x 50 x 2.0	0.41	0.17	0.22
x 2.5	0.70	0.19	0.25
x 3.0	0.78	0.21	0.28
x 4.0	0.85	0.24	0.31
x 5.0	0.91	0.27	0.35
x 6.0	0.96	0.29	0.37

* MAXIMUM ROOF LOAD WIDTH = 1.8m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.



Design Criteria

- Roof Dead Load, G used is 0.4 kPa for Steel Roof and 0.9 kPa for Tile Roof, and Roof Live Load used is 0.25 kPa.
- Live Loads, Q used on cantilever are:
 - * 2.0 kPa for cantilevers supporting Sheet and Tile Roof
 - * 4.0 kPa & 1.5kN/m run on edge for "No Roof Load"
 Live Loads used on backspan:
 - * 0 kPa for floors supporting Sheet and Tile Roof
 - * 0.4 kPa for "No Roof Load"
- Wind Loads used in Tables 22 and 24 are determined in accordance with AS 4055: Wind loads for housing, for maximum "C3" wind category.

- Maximum roof load width is equal to 5m for joists and 1.8m for bearers.
- For cantilever balcony not supporting a roof use "No Roof Loading" column.
- Maximum bearer spacing for Table 23 and 24 is 3.6m.
- If additional loads are applied the advice of a Structural Engineer must be sought.

Cantilever Spans

for 3kPa domestic floors in cyclonic and non-cyclonic regions

Joists

Non Cyclonic

Table 25 – Maximum span of cantilever joists 3 kPa

DuraGal® ZB 135/135 C450L0 RHS Size¹		Maximum Cantilever Span (m)					
		Joist Spacing = 450mm			Joist Spacing = 600mm		
		No Roof Loading	Sheet Roof*	Tile Roof*	No Roof Loading	Sheet Roof*	Tile Roof*
75 x 50	x 1.6	0.53	0.18	0.10	0.48	0.14	0.08
	x 2.0	0.57	0.20	0.12	0.52	0.16	0.09
100 x 50	x 1.6	0.71	0.26	0.16	0.60	0.24	0.14
	x 2.0	0.78	0.29	0.17	0.69	0.25	0.15
150 x 50	x 2.0	1.12	0.54	0.35	0.96	0.49	0.31
	x 2.5	1.20	0.61	0.40	1.08	0.52	0.33
	x 3.0	1.27	0.67	0.44	1.15	0.57	0.37
	x 4.0	1.37	0.76	0.51	1.24	0.65	0.43
	x 5.0	1.43	0.84	0.57	1.31	0.72	0.48
	x 6.0	1.49	0.91	0.62	1.37	0.77	0.52

* MAXIMUM ROOF LOAD WIDTH = 5m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.
2. Refer to the Design Criteria on page 12.

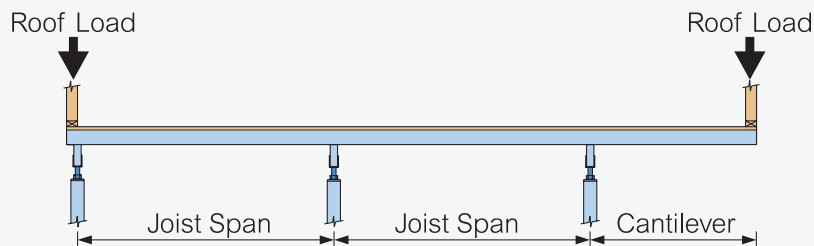
Cyclonic

Table 26 – Maximum span of cantilever joists 2 kPa

DuraGal® ZB 135/135 C450L0 RHS Size¹		Maximum Cantilever Span (m)					
		Joist Spacing = 450mm			Joist Spacing = 600mm		
		No Roof Loading	Sheet Roof*	Tile Roof*	No Roof Loading	Sheet Roof*	Tile Roof*
75 x 50	x 1.6	0.54	0.07	0.10	0.49	0.06	0.08
	x 2.0	0.59	0.08	0.11	0.53	0.07	0.09
100 x 50	x 1.6	0.73	0.11	0.15	0.62	0.10	0.14
	x 2.0	0.80	0.12	0.17	0.71	0.10	0.14
150 x 50	x 2.0	1.14	0.26	0.34	0.99	0.23	0.31
	x 2.5	1.22	0.29	0.39	1.11	0.24	0.32
	x 3.0	1.29	0.33	0.44	1.17	0.27	0.36
	x 4.0	1.37	0.38	0.51	1.26	0.31	0.42
	x 5.0	1.43	0.43	0.56	1.33	0.35	0.47
	x 6.0	1.49	0.47	0.61	1.37	0.39	0.51

* MAXIMUM ROOF LOAD WIDTH = 5m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.
2. Refer to the Design Criteria on page 12.



Cantilever Spans

for 3kPa domestic floors in cyclonic and non-cyclonic regions

Bearers

Non Cyclonic

Table 27 – Maximum span of cantilever bearers 3 kPa

DuraGal® ZB 135/135 C450L0 RHS Size ¹	Maximum Cantilever Span (m)		
	No Roof Loading	Sheet Roof*	Tile Roof*
100 x 50 x 2.0	0.40	0.22	0.14
125 x 75 x 2.0	0.35	0.35	0.24
x 2.5	0.61	0.37	0.26
x 3.0	0.65	0.40	0.28
150 x 50 x 2.0	0.31	0.38	0.26
x 2.5	0.56	0.41	0.29
x 3.0	0.71	0.45	0.32
x 4.0	0.78	0.50	0.36
x 5.0	0.83	0.54	0.40
x 6.0	0.88	0.57	0.42

* MAXIMUM ROOF LOAD WIDTH = 1.8m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

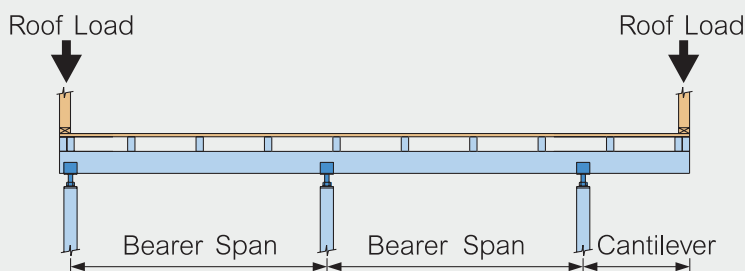
Cyclonic

Table 28 – Maximum span of cantilever bearers 3 kPa

DuraGal® ZB 135/135 C450L0 RHS Size ¹	Maximum Cantilever Span (m)		
	No Roof Loading	Sheet Roof*	Tile Roof*
100 x 50 x 2.0	0.40	0.10	0.13
125 x 75 x 2.0	0.35	0.17	0.22
x 2.5	0.61	0.18	0.24
x 3.0	0.65	0.20	0.26
150 x 50 x 2.0	0.31	0.18	0.24
x 2.5	0.56	0.21	0.27
x 3.0	0.71	0.23	0.29
x 4.0	0.78	0.26	0.33
x 5.0	0.83	0.29	0.37
x 6.0	0.88	0.31	0.39

* MAXIMUM ROOF LOAD WIDTH = 1.8m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.



Design Criteria

1. Roof Dead Load, G used is 0.4 kPa for Steel Roof and 0.9 kPa for Tile Roof, and Roof Live Load used is 0.25 kPa.
2. Live Loads, Q used on cantilever are:
 - * 3.0 kPa for cantilevers supporting Sheet and Tile Roof
 - * 6.0 kPa & 1.5kN/m run on edge for "No Roof Load"
 Live Loads used on backspan:
 - * 0 kPa for floors supporting Sheet and Tile Roof
 - * 0.6 kPa for "No Roof Load"

3. Wind Loads used in Tables 26 and 28 are determined in accordance with AS 4055: Wind loads for housing, for maximum "C3" wind category.
4. Maximum roof load width is equal to 5m for joists and 1.8m for bearers.
5. For cantilever balcony not supporting a roof use "No Roof Loading" column.
6. Maximum bearer spacing for Table 27 and 28 is 3.6m.
7. If additional loads are applied the advice of a Structural Engineer must be sought.

Cantilever Spans

for 5kPa domestic floors in cyclonic and non-cyclonic regions

Joists

Non Cyclonic

Table 29 – Maximum span of cantilever joists 5 kPa

DuraGal® ZB 135/135 C450L0 RHS Size¹	Maximum Cantilever Span (m)					
	Joist Spacing = 450mm			Joist Spacing = 600mm		
	No Roof Loading	Sheet Roof*	Tile Roof*	No Roof Loading	Sheet Roof*	Tile Roof*
75 x 50	x 1.6	0.48	0.19	0.11	0.42	0.17
	x 2.0	0.52	0.21	0.13	0.47	0.18
100 x 50	x 1.6	0.59	0.31	0.20	0.52	0.28
	x 2.0	0.69	0.31	0.20	0.61	0.27
150 x 50	x 2.0	0.92	0.61	0.43	0.81	0.57
	x 2.5	1.06	0.60	0.42	0.95	0.53
	x 3.0	1.12	0.66	0.46	1.02	0.56
	x 4.0	1.21	0.74	0.53	1.10	0.64
	x 5.0	1.28	0.81	0.59	1.16	0.70
	x 6.0	1.33	0.87	0.64	1.21	0.75

* MAXIMUM ROOF LOAD WIDTH = 5m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.
2. Refer to the Design Criteria on page 12.

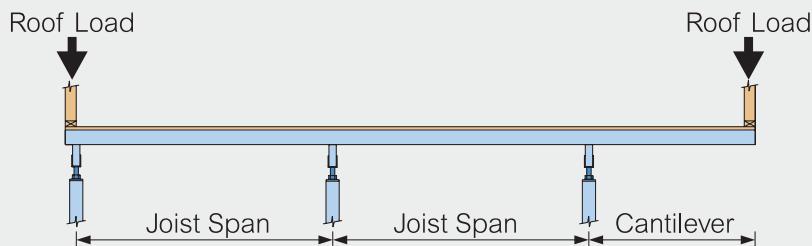
Cyclonic

Table 30 – Maximum span of cantilever joists 5 kPa

DuraGal® ZB 135/135 C450L0 RHS Size¹	Maximum Cantilever Span (m)					
	Joist Spacing = 450mm			Joist Spacing = 600mm		
	No Roof Loading	Sheet Roof*	Tile Roof*	No Roof Loading	Sheet Roof*	Tile Roof*
75 x 50	x 1.6	0.49	0.08	0.11	0.43	0.07
	x 2.0	0.54	0.09	0.12	0.48	0.08
100 x 50	x 1.6	0.61	0.15	0.20	0.53	0.13
	x 2.0	0.70	0.14	0.19	0.63	0.12
150 x 50	x 2.0	0.95	0.33	0.42	0.84	0.30
	x 2.5	1.08	0.32	0.41	0.97	0.27
	x 3.0	1.14	0.36	0.46	1.04	0.29
	x 4.0	1.23	0.41	0.53	1.12	0.34
	x 5.0	1.29	0.46	0.59	1.19	0.38
	x 6.0	1.34	0.50	0.63	1.24	0.42

* MAXIMUM ROOF LOAD WIDTH = 5m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.
2. Refer to the Design Criteria on page 12.



Cantilever Spans

for 5kPa domestic floors in cyclonic and non-cyclonic regions

Bearers

Non Cyclonic

Table 31 – Maximum span of cantilever bearers 5 kPa

DuraGal® ZB 135/135 C450L0 RHS Size¹	Maximum Cantilever Span (m)		
	No Roof Loading	Sheet Roof*	Tile Roof*
100 x 50 x 2.0	0.34	0.23	0.16
125 x 75 x 2.0	0.26	0.36	0.27
x 2.5	0.52	0.37	0.28
x 3.0	0.58	0.40	0.30
150 x 50 x 2.0	0.21	0.39	0.29
x 2.5	0.41	0.40	0.31
x 3.0	0.62	0.44	0.33
x 4.0	0.68	0.48	0.37
x 5.0	0.73	0.52	0.41
x 6.0	0.76	0.55	0.43

* MAXIMUM ROOF LOAD WIDTH = 1.8m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.

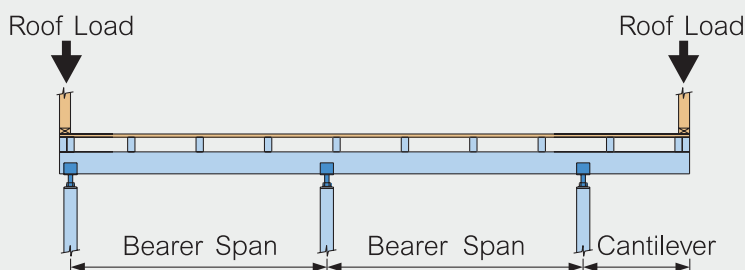
Cyclonic

Table 32 – Maximum span of cantilever bearers 5 kPa

DuraGal® ZB 135/135 C450L0 RHS Size¹	Maximum Cantilever Span (m)		
	No Roof Loading	Sheet Roof*	Tile Roof*
100 x 50 x 2.0	0.34	0.11	0.15
125 x 75 x 2.0	0.26	0.20	0.25
x 2.5	0.52	0.21	0.26
x 3.0	0.58	0.22	0.28
150 x 50 x 2.0	0.21	0.22	0.27
x 2.5	0.41	0.23	0.29
x 3.0	0.62	0.25	0.31
x 4.0	0.68	0.28	0.35
x 5.0	0.73	0.31	0.38
x 6.0	0.76	0.34	0.41

* MAXIMUM ROOF LOAD WIDTH = 1.8m

1. Preferred sizes shown in bold print. For availability of other sizes we recommend you consult the DuraGal Flooring System® Supplier in your area.



Design Criteria

1. Roof Dead Load, G used is 0.4 kPa for Steel Roof and 0.9 kPa for Tile Roof, and Roof Live Load used is 0.25 kPa.
2. Live Loads, Q used on cantilever are:
 - * 5 kPa for cantilevers supporting Sheet and Tile Roof
 - * 10 kPa & 1.5kN/m run on edge for "No Roof Load"
 Live Loads used on backspan:
 - * 0 kPa for floors supporting Sheet and Tile Roof
 - * 1.0 kPa for "No Roof Load"
3. Wind Loads used in Tables 30 and 32 are determined in accordance with AS 4055: Wind loads for housing, for maximum "C3" wind category.

4. Maximum roof load width is equal to 5m for joists and 1.8m for bearers.
5. For cantilever balcony not supporting a roof use "No Roof Loading" column.
6. Maximum bearer spacing for Table 31 and 32 is 3.6m.
7. If additional loads are applied the advice of a Structural Engineer must be sought.

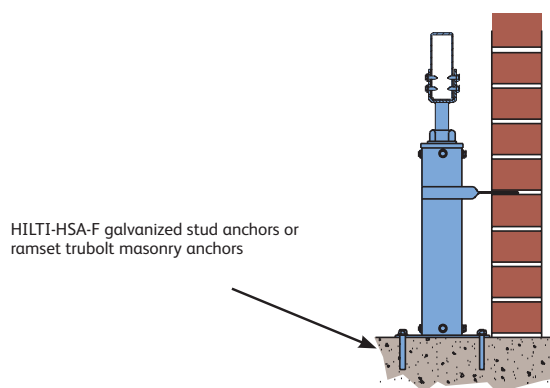
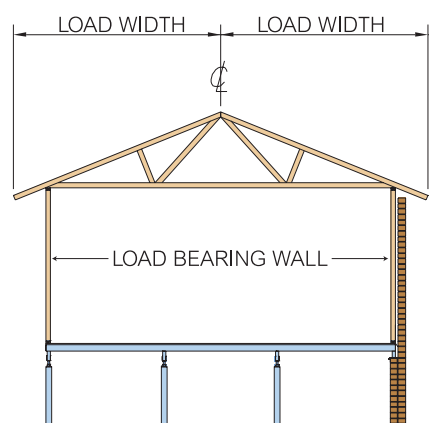
For brick veneer construction, there are many ways of fixing the DuraGal Flooring System® to the brick work. The method used depends on the wind category and building preferences.

In the case of low wind only nominal fixing may be required, for example in a W33N wind category with tile roof. For higher wind situations more robust methods of fixing may be necessary. There are various proprietary systems available, including the one shown which uses a Z-bracket and threaded rod anchor to tie down the bearer.

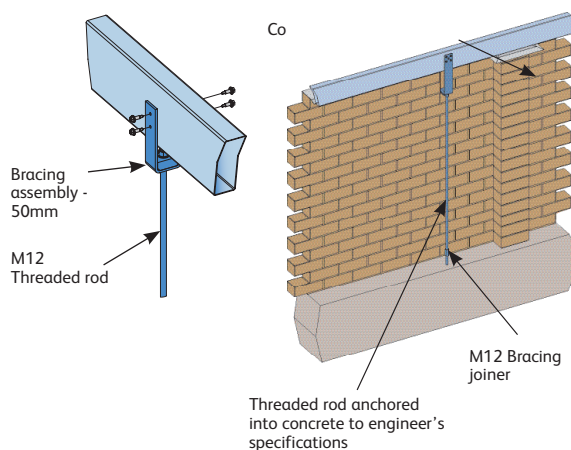
DuraGal® Adjustable Piers can also be used around the perimeter of brick veneer houses. This makes it possible to erect the floor, frame and roof prior to the bricklayer coming to site.

To avoid restricting air flow the piers should not be located adjacent to vents in the brickwork.

Examples of Load Bearing Walls supported by Bearers



Example of fixing for High Wind



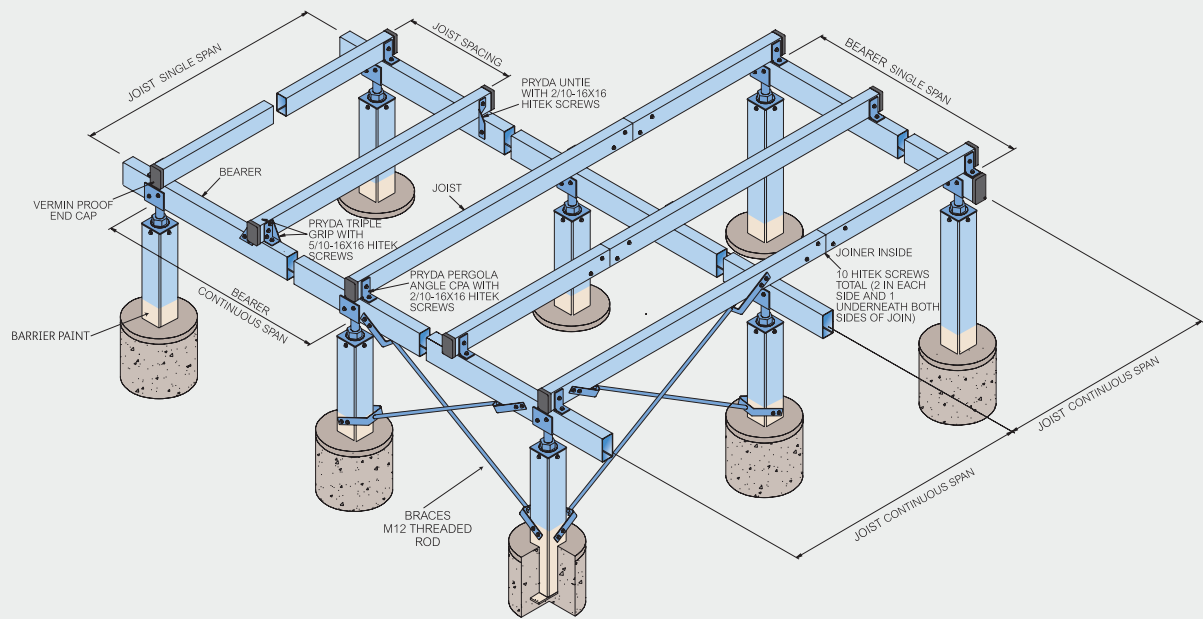
Assembly

Free-standing - non-cyclonic regions

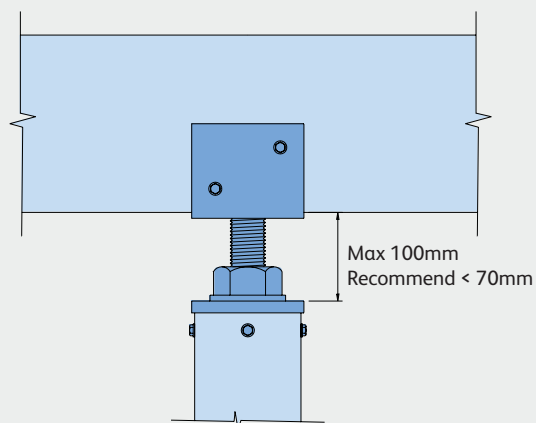


Typical Floor Layout Detail

The DuraGal Flooring System® is an innovative solution for construction on sloping sites.



Maximum extension of pier adjustable top connection



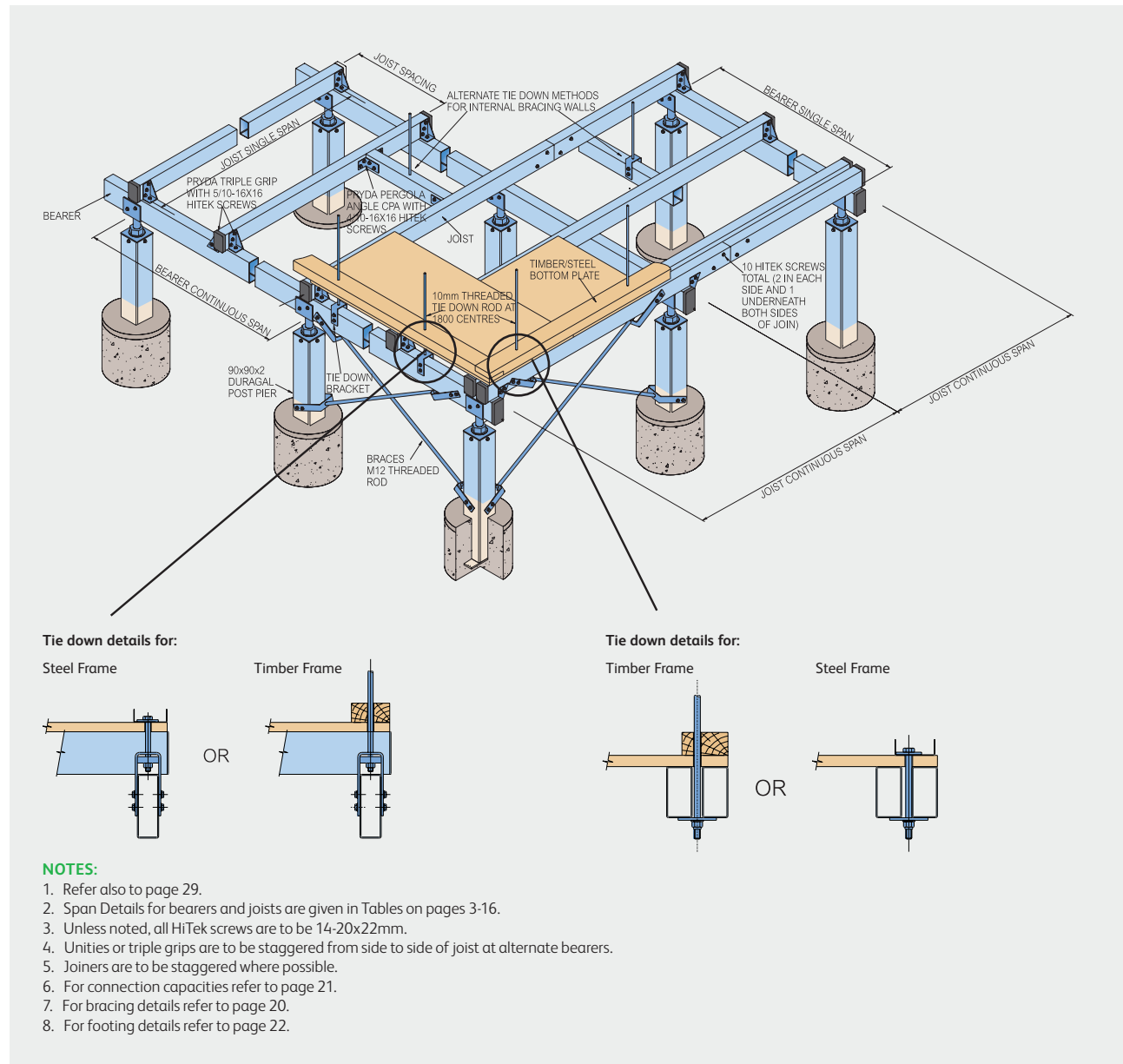
NOTES:

1. Refer also to page 29.
2. Span Details for bearers and joists are given in Tables on pages 3-16.
3. Unless noted, all HiTek screws are to be 14-20x22mm.
4. Unities, triple grips or pergola angles are to be staggered from side to side of joist at alternate bearers.
5. Joiners are to be staggered where possible.
6. For connection capacities refer to page 21.
7. For bracing details refer to page 20.
8. For footing details refer to page 22.



Typical Floor Layout Detail

The DuraGal Flooring System® is an innovative solution for construction on sloping sites.



Footings

Footing parameters will differ with varying soil conditions and wind loadings. Local building approval authorities have differing requirements for the size and depth of footings. It is important that anyone designing and constructing a building seek expert advice from a structural engineer on the requirements specific to each building.

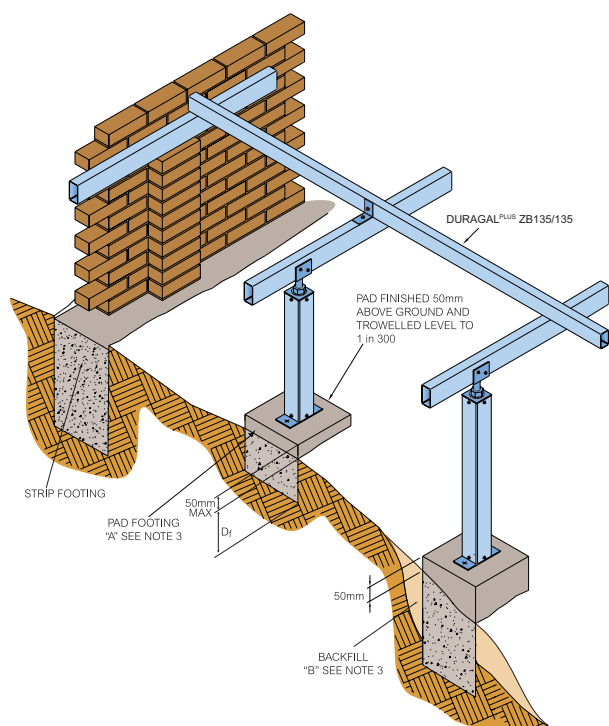
The following information on footings is a general guide only and not a substitute for expert advice.

Brick Veneer

Guidance for engineers only.

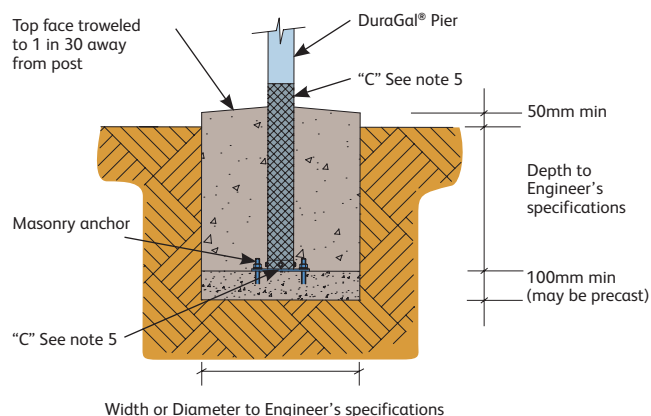
Pad Footing Sizes from AS2870 for Class A, S and M sites.

Effective Supported Area m ²	Width of Square Pad mm	Diameter of Circular Pad mm	Thickness (Min) mm
10	400	500	200
20	500	600	200
40	600	750	250



Free Standing

Typical Footing Detail



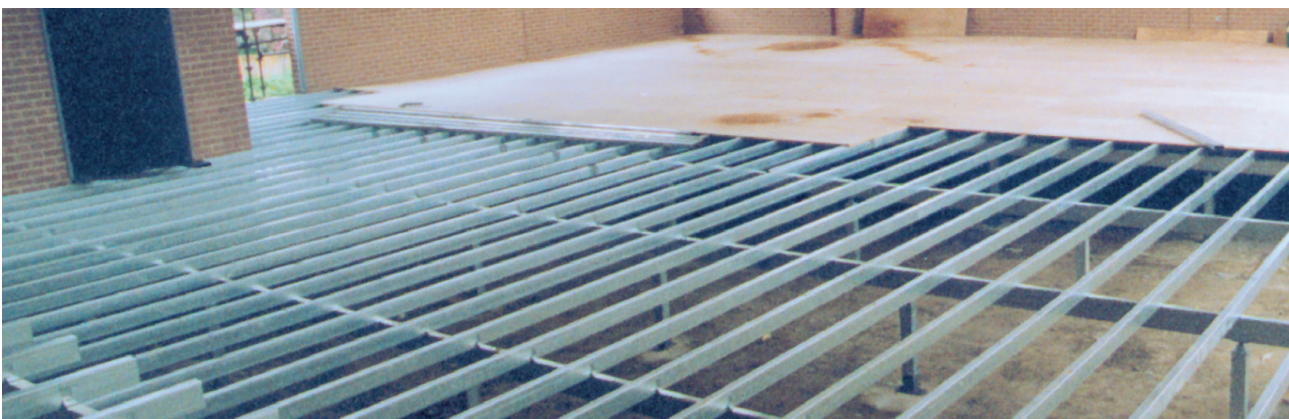
NOTES:

1. Footings to be designed to AS 2870: Residential slabs and footings. Depth of footing D_f from AS 2870.
2. The effective area supported by a pad footing is the sum of: (a) the supported floor area; (b) the supported roof area (if applicable); and (c) half the supported wall area in elevation (if applicable).
3. Pad footings should be finished 50mm above ground level as shown by "A".
4. Where backfilling is required (shown by "B") the concrete for the pad needs to be raised 50mm above the finish ground line.
5. Where piers are embedded into the pads as shown by "C" it is required to apply a barrier coating to a minimum of 100mm above expected final concrete height. The pier bottom connection is also to be painted all round as specified above.
6. Suggested Coatings: Jotun conceal touch up. Preparation and application to paint manufacturer's specification.



Whether the DuraGal Flooring System® is used in brick veneer or free standing construction, assembly is straight forward and uncomplicated. The following is a typical step by step procedure.

1. For brick veneer construction, strip footings and pads are poured. Pads should be located according to the plan, finished 50mm above finished ground level and troweled level to 1 in 300. Bricks then laid to floor level. The DuraGal® pier bottom fittings are fixed to the isolated pads using masonry anchors.
2. In free standing construction approximately 100mm of mass concrete is placed at the base of pad footings, the floor built, then the pier cast in concrete.
3. It is important to determine the appropriate sealing method to prevent corrosion from the ingress of water dependent upon the particular circumstances of the application (refer to pages 29-32).
4. With the foundations in place, accurately measure all pier heights to underside of bearer. Subtract 75mm from each measurement, then cut the piers to length.
5. Attach the proprietary top and bottom pier fittings with Tek screws, and where necessary apply the recommended paint to the pier at least 100mm above finished ground level.
6. Establish a bearer length and cut to suit or use joiners to achieve longer lengths. Don't forget to place the proprietary end caps in the bearers.
7. Place bearers on to the piers, then Tek screw the bearer to the top fitting. For free standing construction temporary bracing may be required. For bearers placed over engaged brick piers, ensure continuous ant capping is in place prior to construction of the floor.
8. Plumb DuraGal® piers, check the height is correct then fix pier bottom fitting with appropriate masonry anchors. The remaining DuraGal piers can now be installed.
9. Repeat steps for all remaining bearers and check squareness/level, adjusting where necessary.
10. Measure the joist lengths against the plan, and cut and/or join as previously carried out with the bearers. Then place end caps into position. To avoid later problems when nailing into the joist the joist seam weld (internal weld bead) should be placed facing down onto the bearer.
11. Fix the end joist into position, alternating the brackets at each bearer.
12. Measure and mark off balance of remaining joist positions and fix into place with the seam weld facing down.
13. For free standing construction, position and install bracing.
14. Do a final level check and adjust if necessary.
15. You are now ready to fix flooring.



Wind pressure produces horizontal loads on the DuraGal Flooring System®. For free standing floors these loads are transferred to the footings through the use of sub-floor bracing.

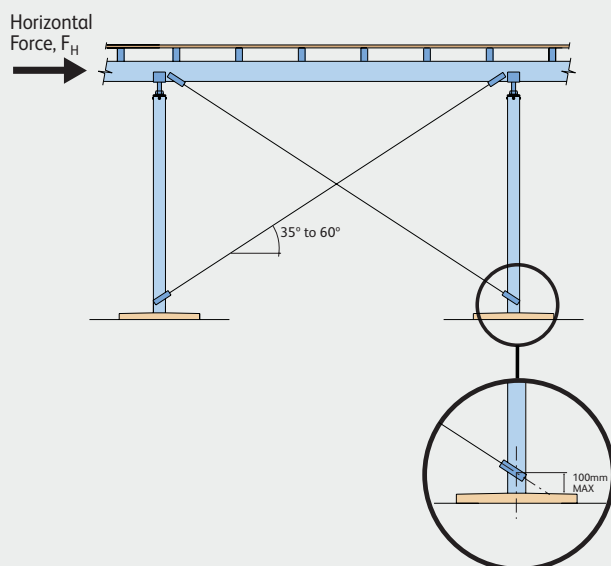
Galvanized cross bracing sets are available from your DuraGal Flooring supplier. Each bracing set is made up of brackets, washers, M12 threaded rods and four nuts. The details of these items are shown on page 25. The bracing brackets are attached with 14-20x22 Tek screws c/w sealing washers, see Detail 8 page 31.

When installed, the bracing is attached to the bottom of the pier and then to either the bearer or joist, depending on the direction being braced, as shown in the diagrams on this page. Table 33 gives horizontal load capacities for a single bracing set when installed at various angles.

As differing wind load conditions apply throughout Australia, engineering certification is required for both the number of bracing sets required and where they are to be installed.

Advice must be sought from a professional structural engineer in regard to the location and number of bracing sets to be used.

Bracing from pier to Bearer



Bracing from pier to Joist

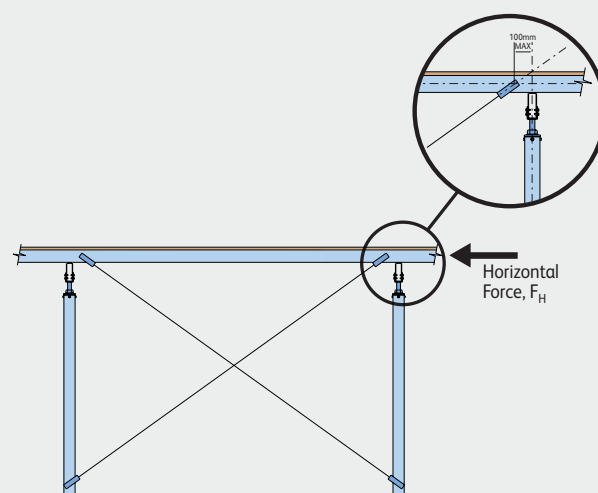


Table 33 – Bracing capacities

BRACING ANGLE (degrees)	Maximum Horizontal Force, FH (kN)	
	ULTIMATE DESIGN	PERMISSIBLE STRESS DESIGN
35	13.0	8.69
40	12.2	8.13
45	11.3	7.50
50	10.2	6.82
55	9.13	6.08
60	7.95	5.30

Table 34 – Floor joist tie down capacity

(kN)

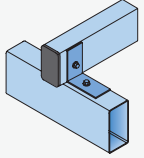
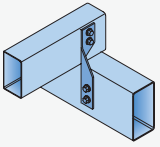
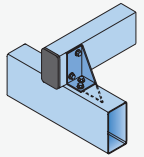
	PRYDA PERGOLA ANGLE minimum 1/10-16x16 tek screw in each leg *joist lifts off before connection engages	0*
	PRYDA UNITIE 4/10-16x16 tek screws 2 in each face	3.86
	PRYDA TRIPLE GRIP 6/10-16x16 tek screws 2 in each face	3.53

Table 35 – Tie down capacity*

(kN)

	U-BRACKET 50mm - WITH M12 ROD 4/14-20x20 tek screws 2 per leg *typically to tie down rafter/trusses to floor frame	11.25
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**Table 36 – DuraGal®
pier & fitting capacity**

(kN)

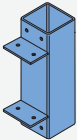
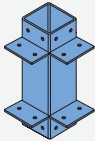
FOR HEIGHTS UP TO 4.5m		
CONSTRUCTION	AXIAL COMPRESSION	AXIAL TENSION
TOP FITTING		
4/14-20x22 Tek Screws	70	25
8/14-20x22 Tek Screws	70	35
BOTTOM FITTING		
4/14-20/22 Tek Screws / 2xM10 Anchors		25
8/14-20x22 Tek Screws / 2xM12 Anchors		35

NOTES:

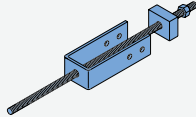
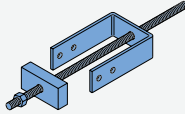
- All loads are strength limit state design capacities.
- When fittings are used in exposed areas the procedures shown on pages 29-32 should be followed.



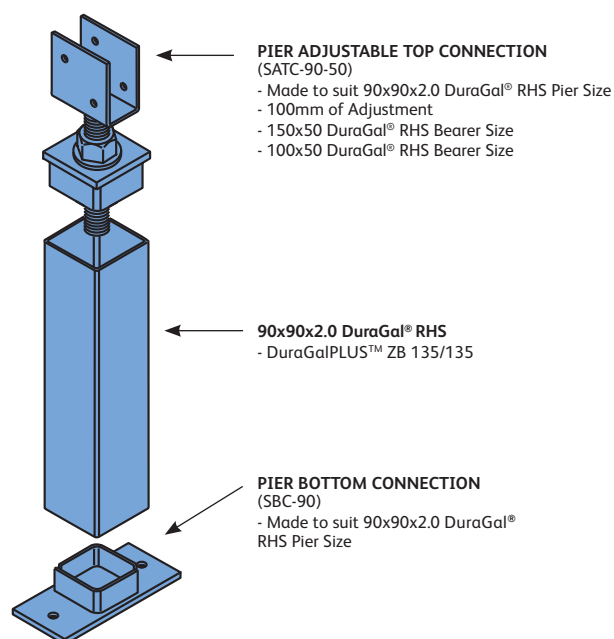
Connections

Miscellaneous	Description	Code
VERANDAH - 2 Lug		
	90x90 - Suits 90x90x2mm & 89x89x3.5mm Piers & 150mm Bearers	BS-90-2
VERANDAH - 4 Lug		
	90x90 - Suits 90x90x2mm & 89x89x3.5mm Piers & 150mm Bearers	BS-90-4
BRACKETS - Galvabond		
PRYDA TRIPLE GRIP - LEFT		TG-L
PRYDA TRIPLE GRIP - RIGHT		TG-R
PRYDA UNITIE - LEFT		UNI-L
PRYDA UNITIE - RIGHT		UNI-R
PRYDA PERGOLA ANGLE		PAB
FASTENERS		
PIER COMPONENTS - HITEKS 14-20x22*		142022
PRYDA BRACKETS - HITEKS 10-16x16*		101616
HARD STEEL TWIST FLOORING NAILS		
PIER BASE - Galv. Masonry Anchors M10x90		M1095
PIER BASE - Galv. Masonry Anchors M12x100		M12100
SEALING		
JOINT SEALING TAPE or alternative suitable material - (50mm W x 15m Roll)		FDP-B805015

* HiTeks c/w sealing washers should be used in exposed areas.

Bracing	Description	Code
TO SUIT 50mm - Galvanized		
	BRACKET ASSEMBLY	BBA-50
	BRACKET	BB-50
	WASHER	BBw-50
	M12 COARSE THREAD	
	ROD 3m + 2/NUTS	M12x3M
TO SUIT 90mm - Galvanized		
	BRACKET ASSEMBLY	BBA-90
	BRACKET	BB-90
	WASHER	BBw-90
	M12 COARSE THREAD	
	ROD 3m + 2/NUTS	M12x3M

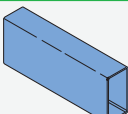
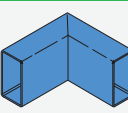
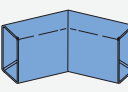
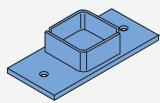
Assembly of the DuraGaPLUS™ adjustable pier

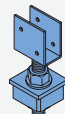
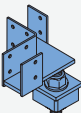
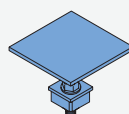


As the DuraGal® ZB 135/135 RHS sections are supplied in factory lengths, joiners will be necessary for longer lengths. A number of joiner sizes are available as detailed on this page.

Joiners for use in the flooring system are able to be placed anywhere within the span of the member. However, the location of the join should be alternated between adjacent joists.

When installing joiners, 10/14-20x22 Tek screws are used, two diagonally placed in each vertical face and one underneath on each side of the join. These details can be seen on pages 18-19. See also pages 29-32 if joiners are being used in exposed areas.

Joiners	RHS Size	Code
STRAIGHT - Galvabond		
	75x50x1.6/2.0	JI-755020
	100x50x1.6/2.0	JI-1005020
	150x50x2.0	JI-1505020
	150x50x3.0	JI-1505030
90o ANGLE - Galvabond		
	75x50x1.6/2.0	JI-90-755020
	100x50x1.6/2.0	JI-90-1005020
	150x50x2.0	JI-90-1505020
45° ANGLE - Galvabond		
	75x50x1.6/2.0	JI-45-755020
	100x50x1.6/2.0	JI-45-1005020
	150x50x2.0	JI-45-1505020
Miscellaneous		
END CAP - Polypropylene		
	75x50x1.6/2.0	PC7550
	100x50x1.6/2.0	PC10050
	150x50x2.0	PC15050
PIER BOTTOM CONNECTION		
	90x90x2.0	SBC-90

Adjustable Connectors	RHS Size	Code
PIER ADJUSTABLE TOP CONNECTION		
	90x90x2.0	SATC-90-50
PIER MULTI TOP ADJUSTABLE CONNECTION*		
	90x90x2.0	SATC-90-MT
	*minimum order quantities may apply	
PIER UNI TOP ADJUSTABLE CONNECTION*		
	90x90x2.0	SATC-90-FP3
	*minimum order quantities may apply	



With Adjustable Pier Top Connection

AS 3660.1 Requirements

AS 3660.1—2000 Termite management Part 1: New building work states:

SECTION 2: Performance Criteria

2.2 GENERAL

2.2.1 Barrier systems

A termite barrier system shall deter concealed entry to the building by termites.

2.2.2 Attachments to buildings

Attachments to buildings shall not prevent visual inspection for termite activity, where the inspection is necessary for the continued effectiveness of a termite barrier system.

2.2.3 Bridging and breaching of termite barrier systems

Structures, fixtures or fittings attached to a building shall not breach or bridge a termite barrier unless that attachment is provided with a barrier system in accordance with 2.2.1.

SECTION 5: Deemed-to-Satisfy Requirements: Sheet Materials

5.6.2 Isolated piers, posts and stumps

All isolated piers, posts and stumps shall be covered with termite shields complying with Clause 5.4. Alternatively, termite shields may be omitted where concrete stumps or drawn or welded metal tubular piers are used, provided that these piers

are free from perforations, sealed at the top and access for inspection of the full perimeter of the pier or stump is available. An alternative to shielding for timber posts using metal stirrups is shown in Figure 5.5, or it shall be in accordance with Sections 6, 7 and 8, as applicable.

DuraGal Flooring System® Compliance with AS 3660.1

DuraGal Flooring System® meets the above requirements by:

Deterring concealed entry as termites would be required to build a tunnel on the outside of the exposed solid steel threaded rod of the DuraGal Flooring System® Adjustable Pier Top component shown below.

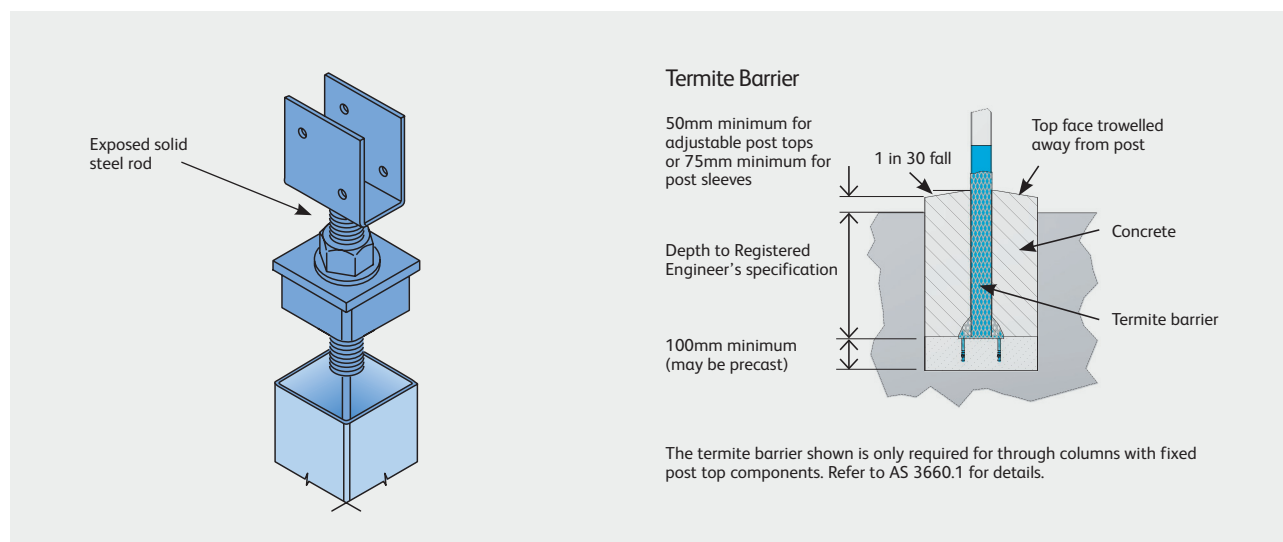
The attachment of the DuraGal Flooring System® Adjustable Pier Top component to the building does not prevent visual inspection as it forces tunnels to be built on the outside of the solid threaded round bar providing a visual inspection point.

DuraGal Flooring System® Adjustable Pier Top component does not breach or bridge a termite barrier as it provides a barrier system in accordance with clause 2.2.2.

DuraGal Flooring System® Adjustable Pier Top has the solid steel rod at the top of the SHS Post (Pier) rather than at the base of the Post as outlined in AS 3660.1-2000, clause 5.6.2, Figure 5.6.

Without Adjustable Pier Top Connection

When the DuraGal Flooring System® piers are cast into concrete and used without the Adjustable Pier Top Connection it is recommended that a termite barrier sock be placed over the pier, as shown below, prior to embedment in concrete.



The Site Environment

The metallurgical bond between the steel and the zinc coating of DuraGal® ZB 135/135 generally imparts good corrosion resistance. However, there are some environments where the rate of corrosion is so high that any steel structure is at risk of rapid corrosion. The rate of corrosion is dependent upon environmental factors such as the amount of corrosive elements present and surface humidity. Sulphur compounds from heavy industrial sites and chloride from marine environments are two commonly known corrosive elements. Acid and alkaline conditions will also accelerate the depletion of the zinc coating leading to corrosion of the underlying steel.

While suitable for building applications in many environments found throughout Australia, the DuraGal Flooring System® will not be suitable for all environments. We do not recommend its use in applications where there is a very high rate of corrosion, such as in marine or heavy industrial environments².

Table 37 details the situations where we do not recommend using the DuraGal Flooring System®:

Table 37 – Do not use the DuraGal Flooring System® within the following distances from the source of corrosion¹

Source of Corrosion	Minimum Distance for Enclosed Floors (km)	Minimum Distance for Open Floors/ Decks (km)
Surf beach	2	4
Sheltered bay	0.5	1.5
Rocky Coastline/Headlands	3	4
Heavy Industrial Area ²	3	4

¹ The distances recommended in this table are minimum distances and what is the appropriate distance from a source of corrosion will depend upon many factors such as prevailing winds, whether shielding exists (ie by trees & adjacent buildings), the topography of the surrounding area, and exposure to rain. In any building application, the specific micro climatic conditions must always be considered and taken into account. DuraGal® ZB 135/135 is not recommended for decks or verandahs adjacent to the splash zone of swimming pools.

² "Heavy Industrial Areas" are locations where the environment may be acidic with a pH value less than 5, as per Section 2.3 of the Australian & New Zealand Standard AS/NZS 2312.

Precautions to Reduce the Risk of Corrosion

Care must be taken to preserve the zinc coating on DuraGal Flooring System® components and minimise the risk of corrosion to the underlying steel. It is recommended the following precautions be taken to reduce the risk of corrosion.

Storage of Floor Components

Most galvanized products including DuraGal® ZB 135/135 sections are susceptible to "White Rust" or "Zinc Storage Stain". The following storage precautions should be observed to minimise the risk of this occurring:

DuraGal® ZB 135/135 sections and components should be stored on site in a dry and well-ventilated position wherever possible.

If packs of DuraGal® ZB 135/135 sections are to be left exposed to the weather for more than a few days, the individual sections should be separated by non-staining timbers such as dressed Radiata Pine (not Treated Pine) and arranged so that all surfaces are well ventilated and any water will readily run off and not pool either on the surface, or inside the section.

If these precautions are not followed, then White Rust may form very quickly. If this occurs, you should consult the DuraGal Easy Painting and Corrosion Guide for suitable remedial treatments, or consult your paint supplier for guidance.

Your DuraGal Flooring System® supplier cannot be held responsible for deterioration as a result of poor storage practices on site.

Partially Erected Floors

It is recommended that the ends and open tops of sections exposed to the weather be covered to prevent the filling of piers and the ponding of water in the joists and bearers from rain.

Fasteners

Do not use any other fasteners other than those recommended in this guide. The use of the wrong type of fastener may lead to corrosion to occur at the contact area between the fastener and the DuraGal® ZB 135/135 sections.

Swarf

Swarf (steel filings) from saws are often initiation points for corrosion. It is recommended that saws be regularly cleaned and that any swarf be brushed from DuraGal Flooring System® components.

Precautions for Corrosion

Ponding of Water

The ponding of water within DuraGal Flooring System® sections must be avoided.

Ponding of water may occur where the ends of sections have been incorrectly sealed, through top adjustable pier connections or by water ingress through fastener holes. Decks and areas of open floor directly exposed to outdoor weather conditions are most susceptible to ponding.

InfraBuild has developed a number of techniques to reduce these risks. Pages 29-32 address these risks in greater detail.

Soil Contact

Contact between DuraGal flooring components and soil should be avoided by proper design of the footings because soil contact markedly increases the corrosion rate of zinc. This is particularly true of clay soils. Please refer to page 22 for Footing Details.

Concrete

An appropriate paint system should be applied at least 100mm above and below the concrete junction where floor components are embedded in concrete. Please refer to page 22 for Footing Details.

Timber Contact (Exposed deck & verandahs)

Do not use treated pine in direct contact with the DuraGal® ZB 135/135 sections as this will increase the corrosion rate of Zinc. Contact with some hardwood species will stain galvanized sections. Although this staining is unsightly, it will not generally be detrimental to the performance of the product. The tape systems recommended in this brochure should be used as a barrier between all timber and DuraGal® ZB 135/135. Please refer to Detail 4 on page 30.

Avoid Contact Between Dissimilar Metals

Contact between dissimilar metals may increase the corrosion rate of one of them. In particular, the use of copper pipes on galvanized surfaces will be detrimental to the galvanising. Water run off from one metal to another may also lead to corrosion of the galvanized metal.

Painting Floors

Use the paint systems recommended in the “DuraGal® Easy Painting and Corrosion Protection Guide” and the “DuraGal® and Galtube Plus Powder Coating Guide” as a general guide for how to paint floor components.

For assistance, contact paint suppliers, or the paint manufacturers listed in the “DuraGal® Easy Painting and Corrosion Protection Guide” for advice on specific paint systems to suit the climatic conditions of your site and application.

Do not use solvent borne decking oils or paints because these solvents may be detrimental to the barrier tapes recommended in this brochure.

Chemicals

Zinc corrosion is increased by acidic or alkaline conditions, and may occur where certain chemicals are present. A common example is the acid run off which occurs from brick washing. Contact between these sorts of chemicals and the DuraGal Flooring System® components must be avoided. If accidental contact occurs, immediately hose down the contaminated area with water. If the galvanizing is affected, repair of the coating will be required to restore the level of protection. Contact your DuraGal Flooring System® supplier for advice.

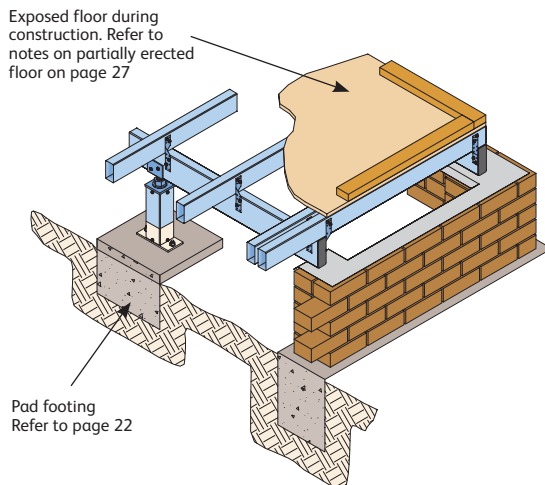
Sealing of Fittings

To ensure the maximum life of a DuraGal® floor it is recommended that fittings be sealed. Drawings on pages 22-32 give recommendations for three basic floor types.

1. Enclosed Sub-floors, Figure 1

Where the sub-floor is protected from the external environment. Eg Brick veneer construction.

FIGURE 1.
Enclosed sub-floor



2. Open Sub-floors, Figure 2

Where the sub-floor is exposed to the external environment on the outer perimeters of the sub-floor. Eg Free standing construction.

3. External Decks, Figure 3

External decks cover a large range of construction types. Figure 3 deals with decks attached to a building with or without a covering roof. The sub-floor is assumed to be open and the decking material is either hardwood or treated timber slats.

FIGURE 2.
Open Sub-Floor

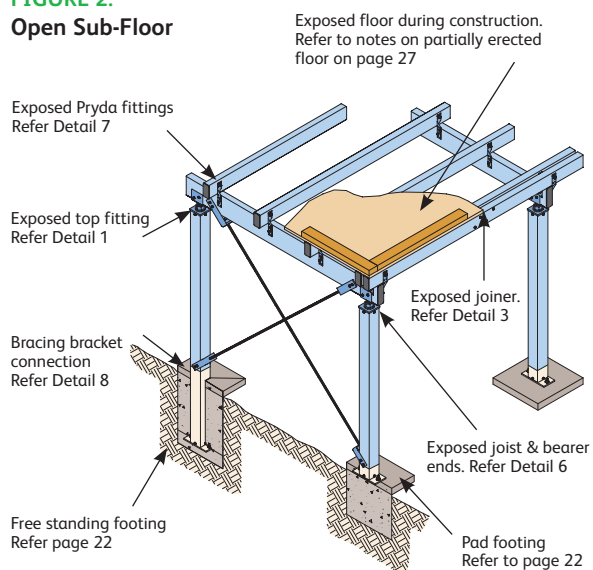
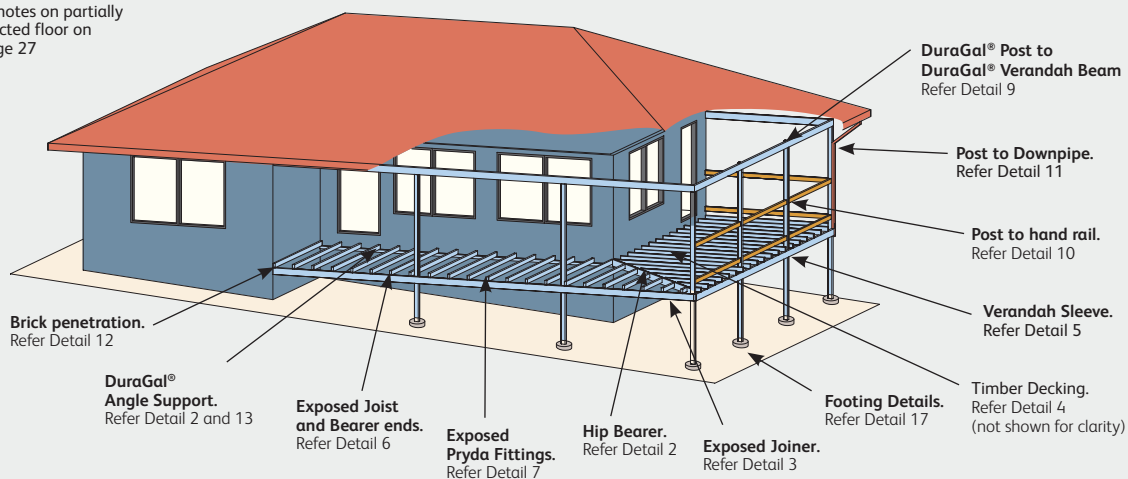


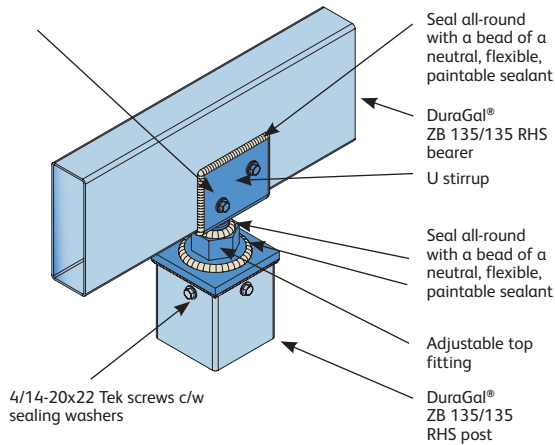
FIGURE 3.
External Deck

Exposed floor during construction. Refer to notes on partially erected floor on page 27

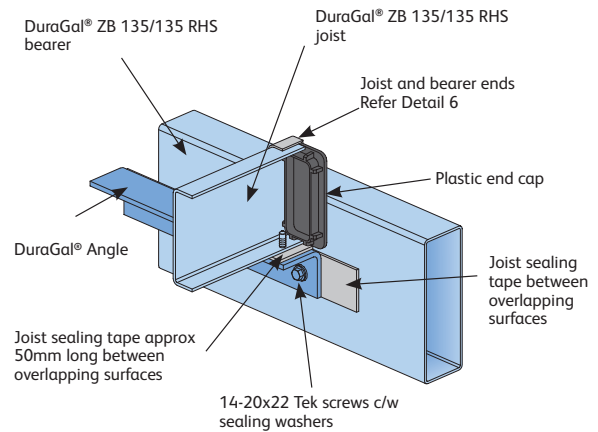


DETAIL 1. Top Fitting Sealing

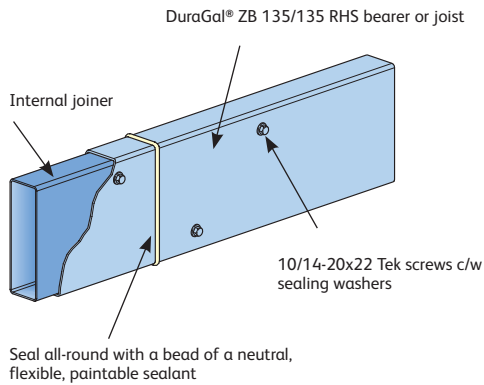
4/14-20x22 Tek screws c/w sealing washers



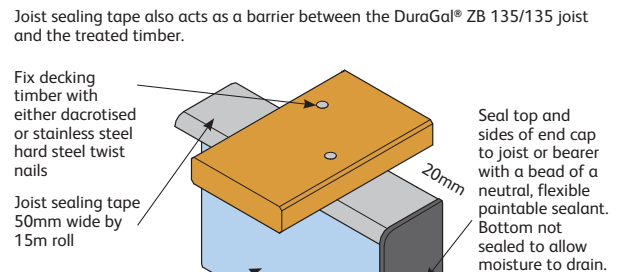
DETAIL 2. Angle Support To Bearer Sealing (Applies To Verandah Hip & Surround Bearers)



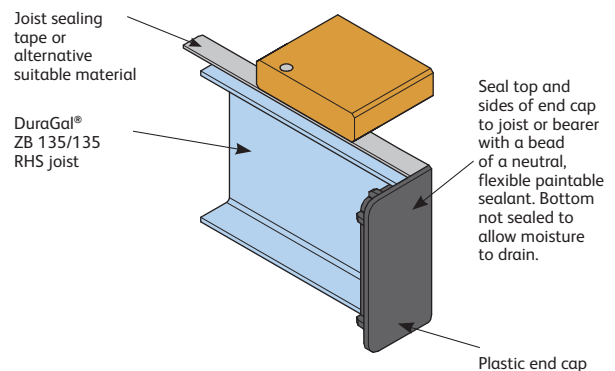
DETAIL 3. Internal Joiner Sealing



DETAIL 4. Timber Decking To Joist Sealing



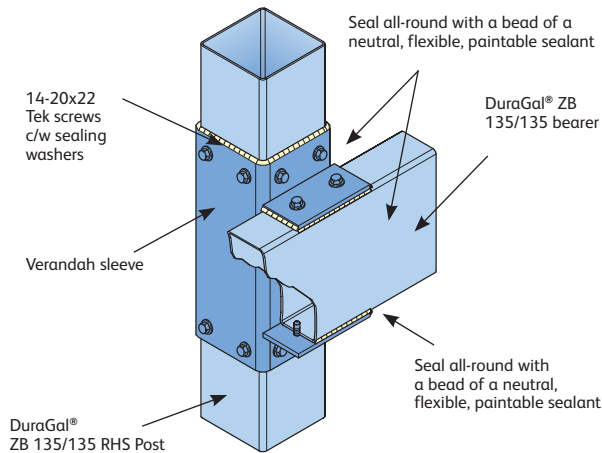
Isometric view of joist sealing tape and joist sealing tape



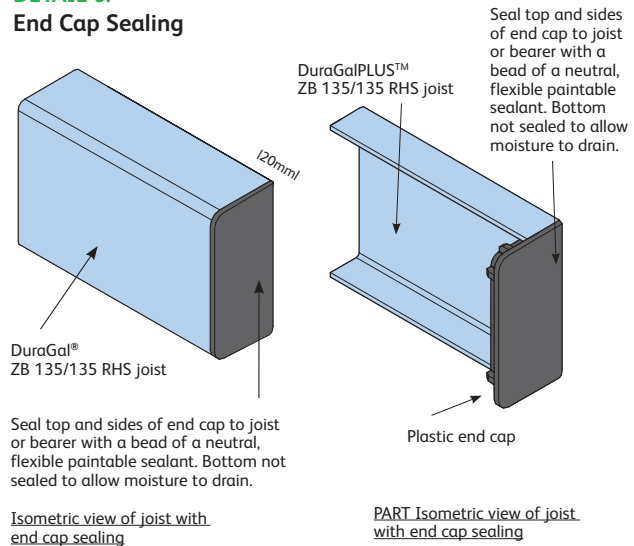
Part isometric view of joist sealing tape and end cap sealing

Caution: Do not use solvent borne decking oils or paints because these solvents may be detrimental to the barrier tapes

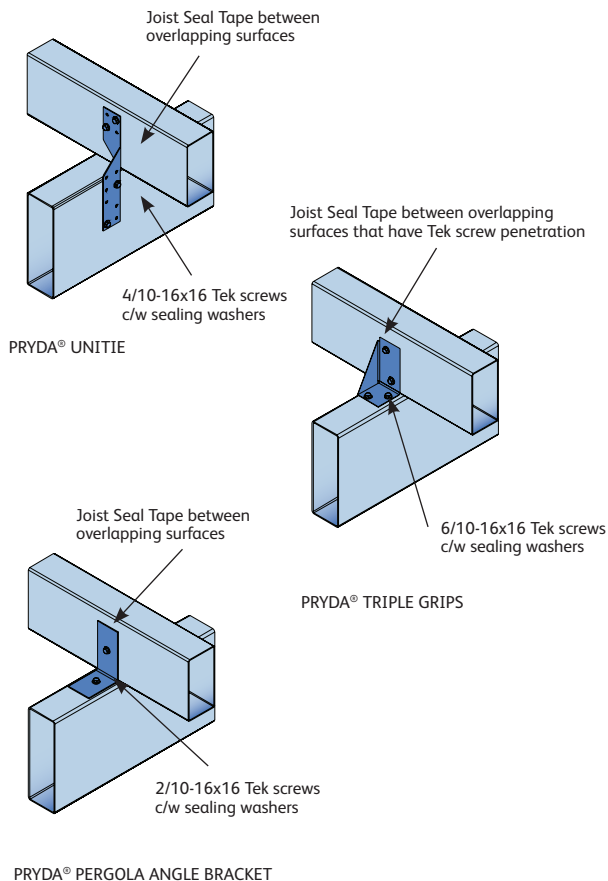
DETAIL 5. Verandah Sleeve To DuraGal® Sealing



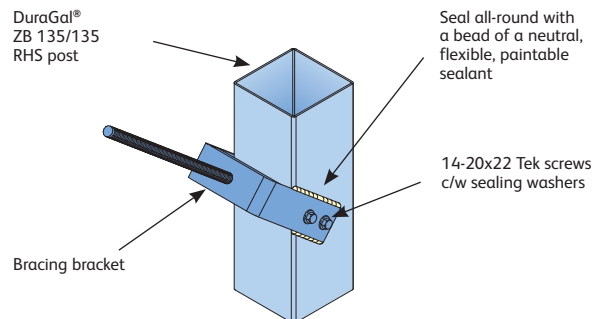
DETAIL 6. End Cap Sealing



DETAIL 7. Pryda Fittings To DuraGal® Sealing



DETAIL 8. Bracing Bracket Connection Sealing



DETAIL 9. DuraGal® Post To Verandah Beam Sealing

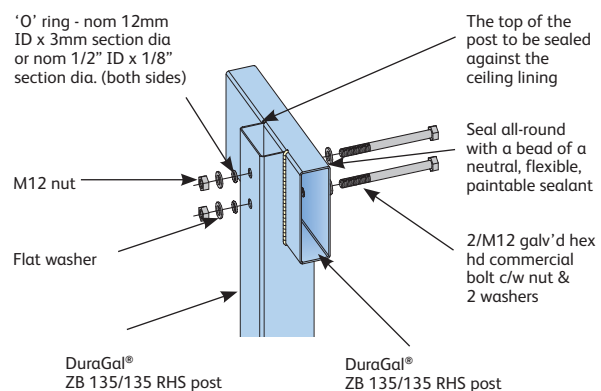
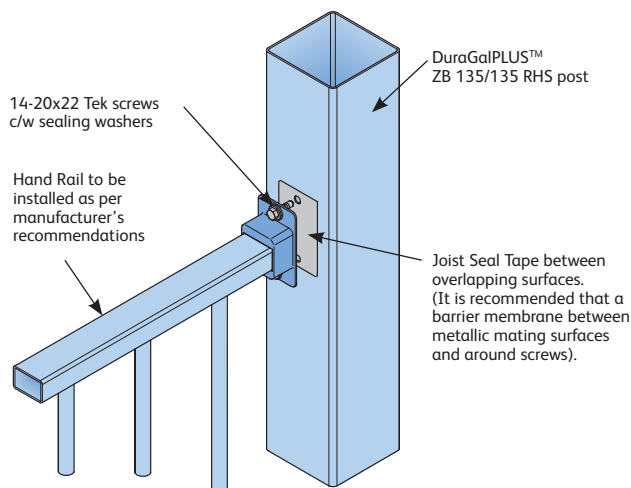
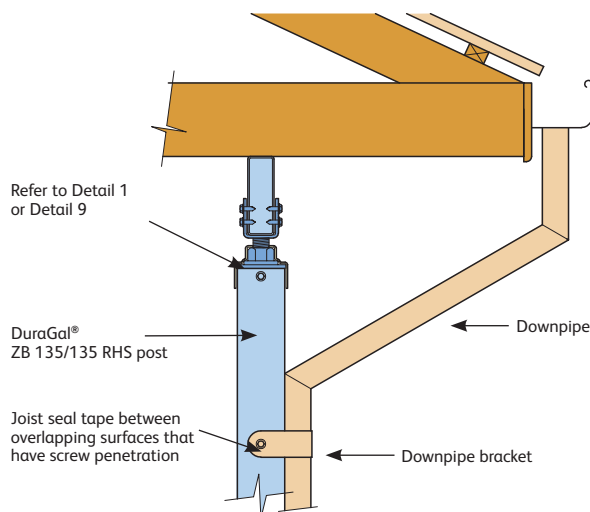


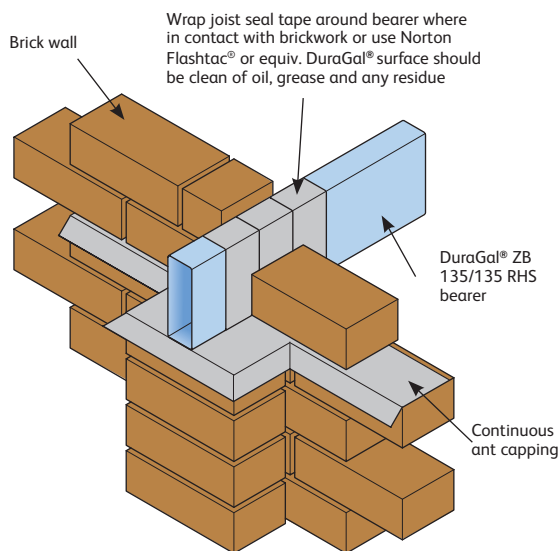
FIGURE 10.
DuraGal® Post To Hand Rail Sealing



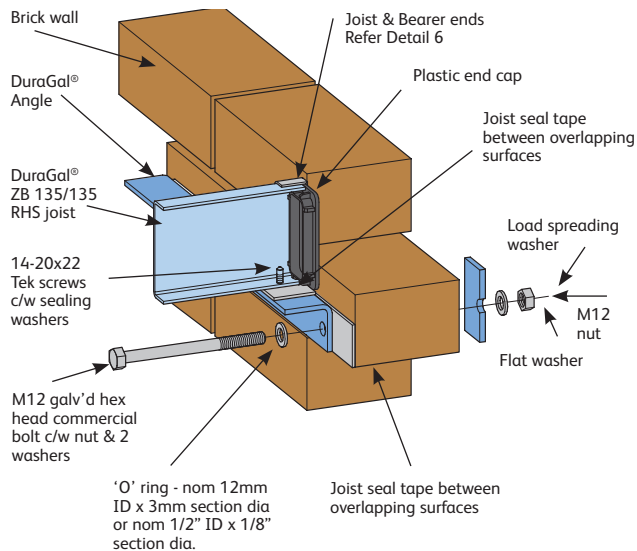
DETAIL 11.
DuraGal® Post To Downpipe Sealing



DETAIL 12.
Brick Penetration Sealing



DETAIL 13.
DuraGal® Angle To Brickwork Sealing



Nailing of Sheet Flooring to DuraGal® ZB 135/135 Joists

Sheet flooring can be successfully glued and nailed to both 1.6 and 2.0mm DuraGal® ZB 135/135 joists. Most nailing tools including Duo-Fast® and Max®, or equivalent, have been successfully trialled using the manufacturers recommended hard steel end twist nails.

Most reputable building adhesives work on steel joists and should be applied as per manufacturers recommendations to dry joists.

To date, the best results have been obtained by using the Duo-Fast coil nailing tool with a 32mm hard steel end twist nail.

Details are:

TOOL: Duo-Fast® Model KD 655 BII, 665a or 750b

NAIL: Duo-Fast® C25 / 32 SH Dac

Con Hard Steel Twist Nail.

Notes:

Sheet flooring can also be glued and screwed using Buildex® WingTek screws (or equivalent) and is the recommended method for joists with wall thickness greater than 2.0mm.

Nailing of Timber Decking to DuraGal® ZB 135/135 Joists

External timber decking can be nailed to both 1.6 and 2.0mm DuraGal® ZB 135/135 Joists. When using hardwood or treated timber decking, the best results to date have been obtained from the Duo-fast® Coil nailing tool and also a Max® Coil nailing tool with 38mm long 304 stainless steel hardened twist nails.

Details for external fixing are:

TOOL: Max® Tool Model CN-650M-FAP50V9

NAIL: Max® Nail 2.5 x 38mm long 304 stainless steel hardened twist nail.

TOOL: Duo-fast® Model KD 650bII, 665a or 750b

NAIL: Duo-fast® C25 / 32 SH Dac Con Hard Steel Twist Nail.

Notes:

1. To reduce the risk of corrosion, joist sealing tape should be used on the top of the joists for all external timber decks or verandahs as shown in Detail 4 page 30.
2. The use of screws to attach timber decking to joists on external decks and verandahs is not recommended.

Nailing Guidelines

- The joist weld seam, (internal weld bead), should be placed down onto the bearer, during installation.
- Do not attempt to nail through joiners, nail either side of them.
- The air pressure should be a constant 710 kPa minimum to 800 kPa maximum, (105 to 120 PSI).
- Nailing tool must be perpendicular to sheet and firmly held.
- Ensure nailing tool is on sequential action.
- Bump fire action must never be used.

Cutting DuraGal®

The cutting of steel on site has been made easier with the introduction of a new portable cold cut docking saw that has been introduced by Makita® (4130).

The saw is lighter, and the cold cut produces a burr-free cut (therefore safer), without zinc burn.

For further information on the Makita® 4130 saw contact your local Makita® dealer. Other recommended methods include drop saws, circular hand saws and angle grinders fitted with the appropriate steel cutting disc.



InfraBuild

Building futures through sustainable steel

No other system makes as much sense.

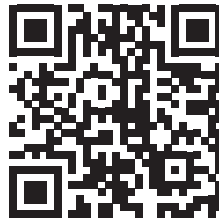
Concrete slabs provide a very solid base upon which to build, but ground movement can cause the slab to crack over time. Future changes or additions to underfloor services will also prove difficult with a concrete slab. Additionally, slabs can act as a highway for termites to attack wooden building frames.

Timber sub-flooring can provide access beneath the house and assist the house to breathe. However, timber sub-floors can attract termites and other pests. Timber can also rot, warp, twist, swell and contract in variable conditions.

DuraGal Flooring System® doesn't warp, twist, crack or shrink. It cannot be affected by termites or pests. It allows access to all services: pipes, hot and cold water, gas supplies and central heating. DuraGal Flooring System® can be assembled on site without welding, and the piers are height adjustable if and when the land settles. DuraGal® offers significant savings in site preparation costs and maintenance.

DuraGal Flooring System® is perfect for both new builds as well as additions such as verandahs and decks which can add value to your home.

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